



MFS / YORK / STORMOR

A Division of **GLOBAL** *Industries, Inc.*



Ezee Dry Bin Dryer

36' Diameter Batch / Continuous Flow

CONSTRUCTION AND OWNER'S MANUAL



The Symbol shown below is used to call your attention to instructions concerning your personal safety. Watch this symbol - it points out important safety precautions. It means **“ATTENTION”** - Become Alert! Your Personal Safety Is Involved! Read the message that follows and be alert to the possibility of personal injury or death.



Be Alert! Your Personal Safety Is Involved

A copy of this manual should be available at all times to the owner/operator. Additional copies may be requested from the company at the address shown on the back cover. Please reference part number #015886 when requesting additional copies.

Please Contact MFS/YORK/STORMOR or Your Dealer
If You Have Any Questions Concerning This Manual

Keep This Manual In A Safe Place Available For Future Reference

PREFACE

You have purchased the finest roof dryer and grain storage bin manufactured today. The following information is intended as a guide in caring for your bin prior to construction, proper construction of your bin, and safe and proper use of your bin once constructed.

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Warranty

Global Industries Inc. (the **Company**) makes the following warranty to the initial retail purchaser of its products (the **Customer**).

MATERIALS and WORKMANSHIP:

The Company warrants products manufactured by it to be free from defects in materials and workmanship in normal use and service for a period of five (5) years after date of delivery to the Customer.

COMPANY'S OBLIGATION and CUSTOMER'S EXCLUSIVE REMEDY:

The Company's sole obligation and the Customer's exclusive remedy under this warranty is as follows:

If within five (5) years after delivery to the customer the product fails to function properly due to a defect in either materials or workmanship, the Company will at its option, either repair the defective part or replace the defective part with a new or reconditioned part. Labor charges for removing defective parts and installing replacement parts, shipping charges with respect to such parts, and applicable sales and other taxes, if any, shall not be covered by this warranty.

CONDITIONS, LIMITATIONS, AND EXCLUSIONS:

There are no warranties or merchantability or fitness for a particular purpose with respect to any product manufactured or sold by the Company. Motors provided by the Company are in most instances warranted by the manufacturer thereof and are not warranted by the Company. The Company shall not be responsible under this warranty or otherwise for personal injury or for **Incidental or Consequential Damages**, including, without limitation, loss of use and lost profits. This warranty does not apply to defects or damages caused by misuse, improper maintenance, or improper installation of the Company's product or any equipment attached to or used in connection with the Company's product. The Company reserves the right to make changes or improvements to its products without incurring any obligation with respect to previously manufactured products. Field modification of this product without the expressed written permission of the Company constitutes a misuse of the product. The Company shall have no liability under this warranty until payment in full for the product in question has been made by the customer. The foregoing is the sole warranty made by the Company. No one is authorized to make other warranties on behalf of the Company.

Maintenance

Virtually the only thing that will limit the useful life of your bin is rust. **MFS/YORK/STORMOR** has specified a galvanized coating on the steel used to fabricate your bin that will give many years of service if properly maintained. However, some rusting over a period of years can be expected with any galvanized products exposed to the weather. We suggest the following:

1. Do not allow the galvanized surfaces of your bin to become cluttered with grain or foreign material. As these organic materials deteriorate, they produce acids that may cause immediate damage to the galvanized coating. Clean off any such buildups immediately.
2. Check the horizontal surfaces of your bin for any rain water ponding. Dry and correct the source of ponding immediately.
3. The useful life of bins installed in coastal or acid rain areas may be improved through periodic rinsing of the exterior surfaces with fresh water.
4. After unloading your bin, any organic material clinging to the interior walls or floor should be removed.
5. Any large areas of zinc oxidation, commonly called “**white rust**”, may eventually lead to deterioration of the base steel itself exhibited by the formation of normal “**red rust**”. Small areas of white rust may be periodically repaired by steel brushing and touch up painting with a wash primer and enamel paint. Large areas of white rust or any red rusted areas should be repaired by sanding to base metal and painting with a quality zinc-rich paint.

Besides stopping the premature development of rust, other things you should periodically check are:

1. Any obvious foundation settlements. Major settlement may cause structural failure of your bin.
2. Deterioration or looseness of any bolts or fasteners.
3. Continued secure attachment of all sidewall and roof ladders.
4. Proper functioning and attachment of all bin openings such as roof caps. Be sure all latches and hold down clips are used as intended.
5. Since your bin is equipped with a floor, periodically remove the fan transition and check beneath the floor for the condition of the floor supports, pests, or a buildup of dust or FM. Clean or repair as required.
6. **MFS/YORK/STORMOR strongly** suggests that any mechanical or electrical auxiliary equipment installed in or on the bin be checked on a yearly basis by a **qualified service technician**. Consult your dealer for this service as they are well versed in the care and maintenance of this equipment.



Important Safety Information

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This MFS/YORK/STORMOR Construction/Safety Manual is written to assist and instruct those who are responsible for the complete Ezee Dry assembly, and for anyone using the Ezee Dry once assembled.

MFS/YORK/STORMOR assumes no liability with respect to proper construction and inspection, assembly, or use of its products established under applicable laws, all of which is the sole responsibility of the purchaser and those doing the assembly work.

Appurtenances and the accessories manufactured by us for use with our products conform only to applicable Federal or Safety Standards in effect at such time.

GENERAL SAFETY STATEMENT

Occupational safety is of prime concern to us at MFS/YORK/STORMOR. This manual was written with the safety of the operator or others who come in contact with the equipment as our prime concern. The manual presents day to day work problems encountered by the operator and other personnel. We wrote this manual to help you to better understand how to safely build and use this Ezee Dry.

It is your responsibility as an owner or operator or supervisor, to know what specific requirements, precautions, and work hazards exist and to make these known to all other personnel working with the equipment or in the area, so that they too may take any necessary safety precautions that may be required.

Failure to read this Manual and its Safety Instructions by all personnel is a misuse of the equipment. We want you as our partner in safety.



Watch For This Symbol! It Points Out Important Safety Precautions. It Means “ATTENTION” - Become Alert! Your Safety Is Involved!

WORK AREA SAFETY STATEMENT

Under no circumstances should persons not involved in the operation be allowed to **trespass** into or be present in the work area.

It shall be the duty of all operators to see that children and/or other persons stay out of the work area! Trespass into the work area by anyone not involved in the actual operations, or trespass into a hazard area by anyone, shall result in an immediate shut down by the operator.

It shall be the responsibility of all operators to see that the work area has secure footing and is clean and free of all debris and tools which might cause accidental tripping and/or falling. It shall also be their responsibility to keep the work area clean and orderly during the operation.

OPERATOR QUALIFICATIONS

Operation of this unit shall be limited to competent and experienced persons. In order to be qualified, he / she must also know and meet all other requirements, such as, but not limited to, the following:

1. Some laws and regulations specify that no one under the age of 16 years may operate power machinery. It is your responsibility to know what these requirements are in your own area or situation.
2. Current OSHA regulations state in part: “At the time of initial assignment and at least annually thereafter, the employer shall instruct **every** employee in the safe operation and servicing of all equipment with which the employee is, or will be involved”*
3. Unqualified persons are to **stay out** of the work area.
4. A person who has not read and understood all operating and safety instructions is not qualified to operate the machine.

* Federal Occupational Safety & Health Standards for Agriculture
Subpart D. Section 9128.57 (a) (6).

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OSHA OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970

Certain purchasers of our products may be subject to the requirements and standards of the William-Steiger Occupational Safety and Health Act of 1970, which prescribes standards for use of appurtenances of our manufacture, such as handrails, platforms, stairways, fixed ladders, ladder cages, and guard rails. (Occupational Safety and Health Standards Section 1910.21 through 1910.32). Before installing these devices, familiarize yourself with the above Federal Standards.

At the time of manufacture, these **optional** items conform to applicable standards. MFS/YORK/STORMOR assumes no liability with respect to proper construction, inspection, assembly, or use of its products under applicable laws, all of which is the sole responsibility of the purchaser and those doing the assembly work.

SAFETY AND OPERATIONAL DECALS

Safety decals as shown on page 9 are installed on your Ezee Dry bin in the locations indicated. Be sure all of these decals are in their proper location on the bin and are in good condition. Check all safety decals and replace any that are worn, missing, or illegible. They may be ordered as any other part is ordered. See your dealer for additional information or contact the factory direct at the address listed on the back cover of this manual.



ADDITIONAL SAFETY RECOMMENDATIONS

A. You may decide to buy and install “auxiliary equipment” made by other manufacturers. MFS/YORK/STORMOR has no control over the design and manufacture of this equipment. If you buy and install auxiliary equipment, then at a minimum **we suggest that you do the following:**

1. Obtain, read, and understand the instructions and cautions of the auxiliary equipment manufacturer. Be sure all equipment is installed according to the manufacturers recommendations.
2. Check with MFS/YORK/STORMOR or your dealer to be sure that your bin is designed to support any additional loads supplied by the auxiliary equipment.
3. Obtain any applicable safety decals from the manufacturer of the auxiliary equipment and insure they are displayed in a visible location.
4. Review and understand the diagram on page 10 concerning minimum conductor clearances for conveyors and electrical storage structures.
5. Make sure all electrical equipment is properly installed and grounded by a qualified electrician.
6. Check availability and operation of electrical lockout and emergency stop systems.
7. Be sure all guards or shields are securely in place.
8. Store all operations/maintenance manuals in a safe place available for future use.

B. In this and other manuals, shields and guards may have been removed for illustrative purposes. Do not operate the equipment without shields and guards in place. Failure to heed this warning may result in serious personal injury or death.

C. The relatively closed environment of a grain bin may promote the presence of toxic molds, hazardous dust, or a lack of oxygen. Never enter a bin without proper respiration equipment and someone else present to watch you.

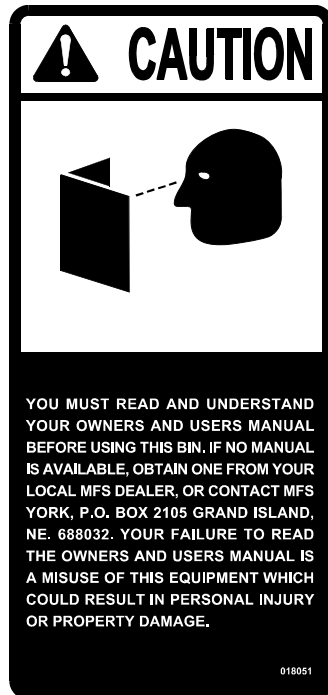
D. Heed the suffocation warning decal shown on page 9. Flowing or crusted grain within a bin can cause a person to become buried and suffocate.

E. When climbing bin sidewall and roof ladders, take care not to fall into or from the bin. Common sense dictates that such appurtenances should not be used when conditions such as rain or wind preclude their safe use. MFS/YORK/STORMOR strongly recommends that optional climbing equipment be purchased to meet the current specifications set forth by OSHA or ANSI whether the individual operator is required by law to do so or not. A properly secured safety belt should be used at all times when performing operations work or maintenance on the bin roof and sidewall.

F. Care must be taken to avoid entanglement in equipment installed in or on the bin. Securely Lock out all power, be it electrical or PTO, prior to working on or near such equipment.

G. Field modification of the bin or auxiliary equipment without the authorization of the manufacturer may present unknown dangers to the operator and must be avoided.

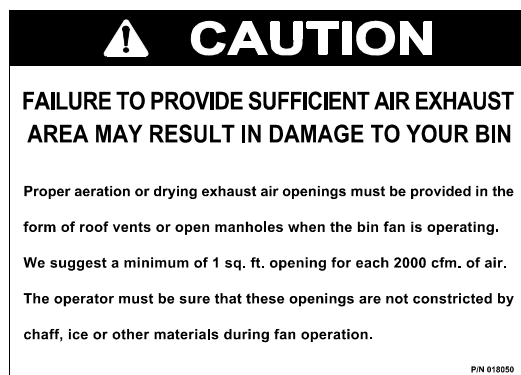
Decal I.D. & Placement



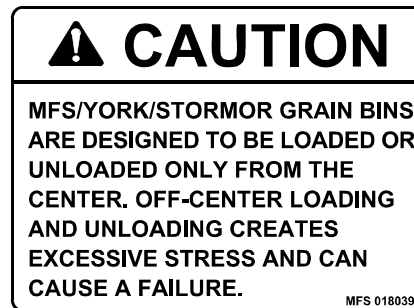
9

Located on the inside of the manway lid and on the inside of the outer door cover.

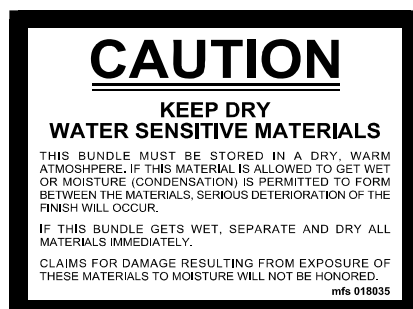
If augers manufactured by others are installed in conjunction with your bin, we strongly recommend that this or a similar decal be installed in a visible location on that equipment if not present.



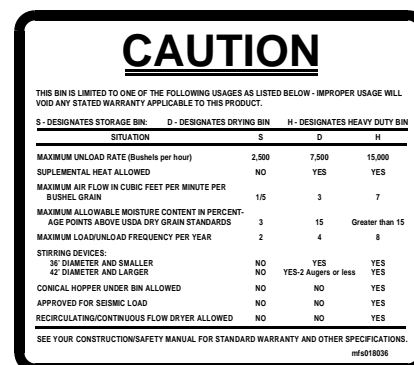
Located on the inner door panel.



Located on the inside at the outer door cover.



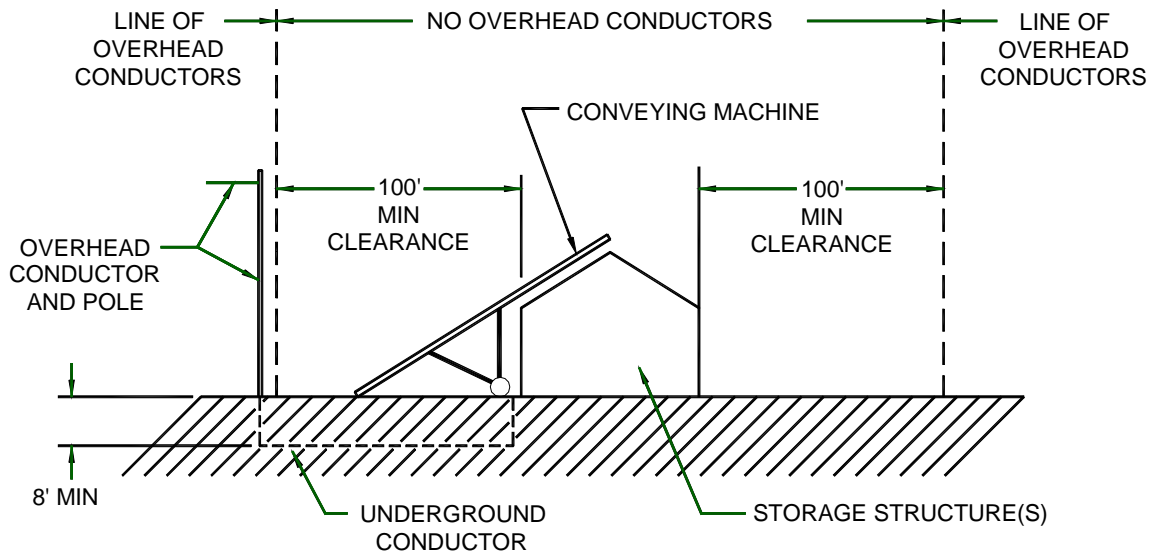
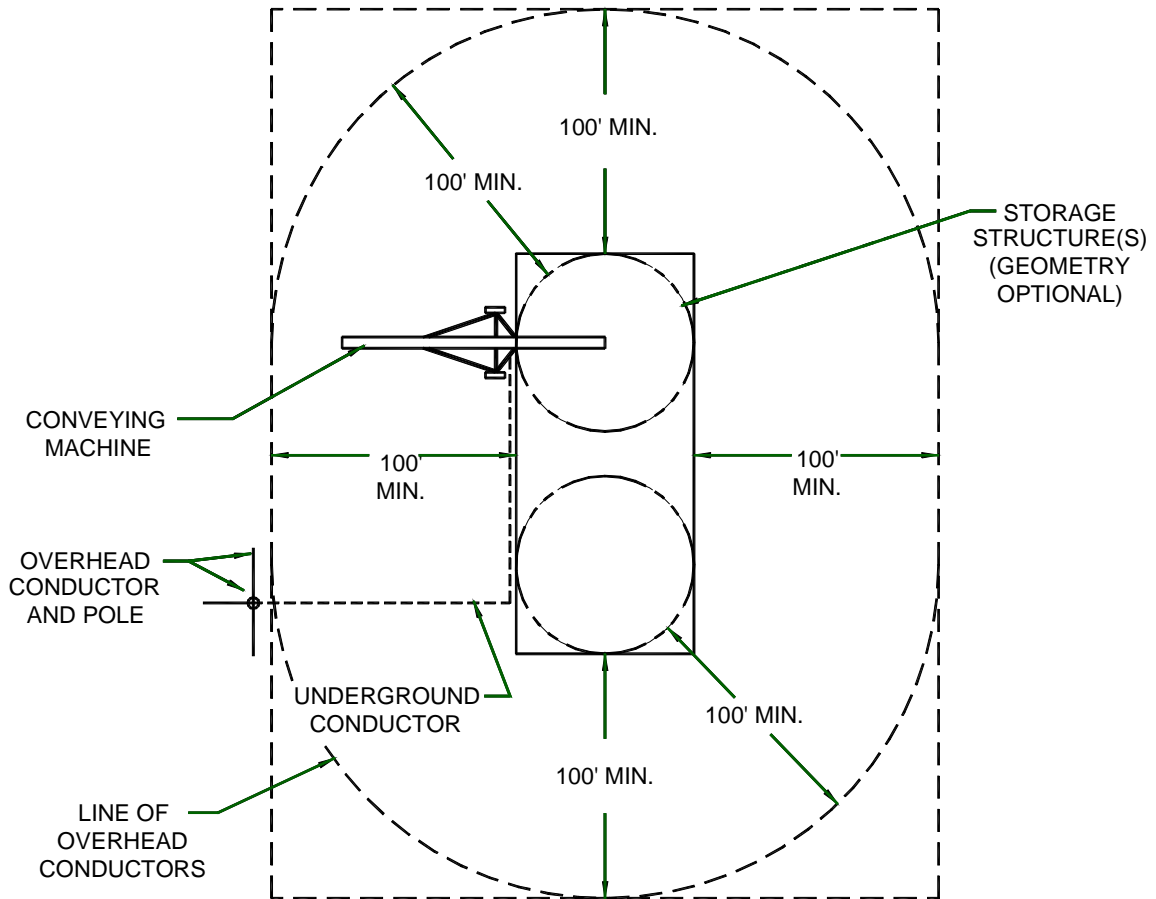
Put on sidewall sheet bundles before shipped.



Your Ezee Dry bin has load carrying capabilities and restrictions that are equivalent to those listed for the Drying Bin.



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Minimum conductor clearances

Specifications

This bin is designed along guidelines which allow it to provide the owner years of service provided it is not used for purposes for which it was not intended. The sidewall gage specifications for your bin appear in the sidewall sheet layout information on pages 26 and 59. The general material specifications for your bin are as follows:

WALLS

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All wall sheets are of corrugated, galvanized steel with 2.66" corrugation.

Wall sheets have .90 oz. per square foot zinc coating (G-90 designation).

2.66" corrugation sheets have 32" vertical coverage.

Horizontal coverage of wall sheets is 112 1/2".

All 5/16" bolts are electro-galvanized grade 8.2 with self-sealing injection molded washers.

Sealer strip is provided to seal all vertical sidewall seams.

Base Sealer is provided to seal between the bin and the concrete foundation.

Anchor Bolts are standard with all Ezee Dry bins.

STANDARD ROOFS

All single span sheets are made of 22 gage galvanized steel and have a 36" opening at the peak with a 2 1/4" rib height.

One manhole roof sheet is standard on each bin. A hinged lid is also included with an opening size of 3.7 square feet.

A roof ladder from the eave to the peak and a roof safety ring is standard with each bin.

Steep 32° roof slope.

There are 36 sheets per roof.

Roof sheets are attached to sidewalls with specially designed eave clips.

Loading:

Live Load - 25 pounds per square foot

Dead Load - 3 pounds per square foot

Wind Load - 20 pounds per square foot

Concentrated Peak Loading:

2000 pounds



Specifications *(continued)*

DOORS

On 2.66 corrugated bins, a single ring 32" door is standard on all sizes and a two ring 64" walk door is available as an option.

The standard location of the one ring door is in the second ring from the bottom. The standard location of the 64" door is in the second and third rings from the bottom. See pages 53 and 54 for installation.

All 32" doors have two inner panels and an outer door cover and 64" doors have three inner panels and an outer door cover.

DESIGN CRITERIA

Bins are designed to store flowable, noncorrosive material with 48 pound bulk density (60 pound/bushel) maximum.

Bins are designed to be filled through the center roof opening only, and to be emptied only from the center. Any off-center unloadings should be used only for clean-out after discharge has been complete to the angle of repose.

Have your erector make all non-bin equipment in excess of the company's recommendations, like LEGS, WALK- WAYS, SPOUTING and CONVEYORS self supporting.

Do not overfill the bin roof area during final storage. This prevents proper air movement through roof vents and may also cause roof damage or failure.

Adequate ventilation area must be furnished to match the cubic foot per minute output of the crop drying and aeration fan installed on the bin. A rule of thumb would be, no more than 2000 cubic feet per minute per square foot vent opening. When you run your fans, make sure your VENTS ARE OPEN and kept clean of all debris and frozen matter. An aeration system can, without proper management, create a greater load on a roof than equipment or snow and can damage the bin roof



WARNING:

Installation of accessories or equipment in or on a grain bin that would over stress the structure in any manner will void the Warranty. If you do not have specific recommendations from MFS/YORK/STORMOR, where additional loading is involved, please contact the Engineering Department of MFS/YORK/STORMOR before installing any such appurtenances or equipment.

Specifications *(continued)*

Ezee Dry Bin Capacity Chart

36' Ezee Dry Bin

No. of Rings	Storage Capacity	Drying Batch Capacity
7	9310	2100
8	11598	2100
9	13885	2100
10	16172	2100
11	18459	2100

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1. Bin capacities are approximate figures. The capacities shown above are based on 1.25 cubic feet per bushel and a compaction factor of 6% in accordance with ASAE voluntary standards.
2. Capacities are in **bushels** calculated as follows:

Storage Capacity:

Grain loaded level 2 rings below the Ezee Dry plenum less 13" aeration floor.

Drying Batch Capacity:

The amount on the plenum floor during a batch drying cycle.

CAUTION

All galvanized steel stored in bundles is subject to oxidation, sometimes called "white rust" when exposed to moisture from any source. Care should be taken to protect sidewall sheets and roof sheets as much as possible. **INSIDE STORAGE IS ADVISABLE.** When on the job site, sheets should be placed on edge far enough apart to allow air to circulate freely.



Specifications *(continued)*

CHECK DELIVERY

Your bin has been carefully checked before shipment. However, you should check your shipment upon arrival using the provided Packing List to insure it is complete.

SIDEWALL SHEET IDENTIFICATION

As an aid in identifying corrugated sheets on the packing list a series of codes are used in the description. Typically the description begins with “COR SHT XX-YYZ” Where XX is the diameter of the bin; YY is the gage; and Z is one or more alpha numeric code designations. The codes used are as follows:

- 5 = Half sheet for entrance collar
- 6 = Door sheet for double punched sheets
- 7 = Door sheets for single punched sheets
- E = Sidewall sheet punched for Ezee Dry Stiffener
- F = Sidewall sheet punched for flashing
- K = Tension sheet / Purlin Attachment
- N = Ezee Dry fan entrance sheet
- P = Double punched sidewall sheet
- T = Transition sheet

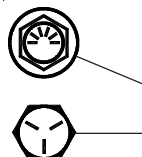
Examples:

COR SHT 18-17EF is an 18’ diameter sheet punched for Ezee Dry stiffeners and flashing.

COR SHT 36-10K is a 36’ diameter sheet punched for Ezee Dry purlins.

TORQUE

Torque specifications for the fasteners that bolt your bin together are listed below. Have your contractor demonstrate that he/she is giving you the correct torque.



Bolt Size	Torque (ft/lbs)
5/16" Grade 8.2	25
3/8" Grade 5	31

When you load or unload grain, always do it from the center. This creates an even load on the structure. Only use your intermediate sumps for clean-up. Off-center loading and unloading creates excessive stresses and can cause a failure.

All bins should be filled at the center of the peak ring with an auger or spout of adequate length to allow grain to drop straight down into the bin.

Do not cut openings in bins. This reduces the structural strength of the unit and can cause partial or complete failure.

Concrete and Site Location

LOCATION OF BIN SITE

Check your site locations for possible problems with the following:

- | | | |
|---------------------------------------|------------------------|-----------------|
| 1. High wind or Snow load area | 4. Local codes/permits | 7. Railroads |
| 2. Waterways and run off | 5. Power lines | 8. Seismic load |
| 3. Poor soil conditions/soil problems | 6. Highways | 9. Hopper Bins |

CHOOSING A BIN SITE

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Consideration should be given to convenience in loading and unloading and accessibility to existing and planned facilities. The site should be level, on firm soil, with adequate drainage. Any fill used in leveling the site **MUST BE** well compacted to prevent uneven settling from weight of the foundation, bin and contents. After the site is completely level, use 1" to 2" of fill sand to act as a cushion under the concrete slab.

Standard foundation drawings and specs are furnished by MFS/YORK/STORMOR showing soil bearing pressures required. **It is the obligation of the purchaser to obtain a soil bearing test and ascertain that the foundation has sufficient strength for a capacity filled bin.** Unless the finished foundation is level and true, and the site properly graded for water drainage, failure of the foundation could result. This is not covered by the MFS/YORK/STORMOR warranty.

At the time your soil is being compacted and the foundation is being poured, make sure that the work is being done in exact accordance with your soil engineer's specifications. **Remember** - if your soil isn't right, your foundation could **TIP AND CRACK** - if your **foundation** isn't right, your bin could fail. The foundation drawings on the following pages are intended as a guide only and are not to be interpreted as "**firm**" instruction. If at a later date, the bin is increased in height, the foundation may not be adequate.

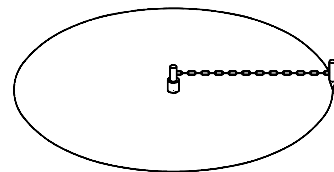
Anchor bolts should be to specifications and be set when pouring the foundation as improper anchoring will give you a **WEAK** structure.

The bin is **ROUND** and to keep it round, **the anchor bolts should follow a SCRIBED CIRCLE** with the correct chord dimensions between the anchor bolts.

The base ring of the bin must rest firmly on the foundation with absolutely no overhang.



1. Lay out the foundation by driving a small pipe to mark the center of the pad. The top of the pipe should be the height of the foundation.
2. Using the pipe for a center pivot, you can use a chain with a sharp stake attached to the outer end to scribe on the ground the foundation diameter. (A board may be used instead of the chain.)
3. After pouring the concrete, and while it is still soft, locate your anchor bolts. Use the center pipe and chain again to mark the correct diameter to set the anchor bolts. Use a measured chain (or chord) to get the correct spacing between holes.

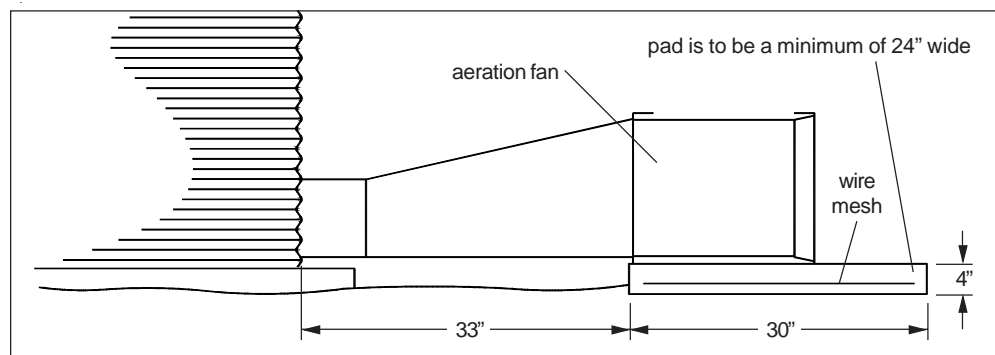




IMPORTANT: Develop a layout plan of the bin, bin accessories, and auxiliary equipment and then build the bin foundation in proper accordance with the layout plan.

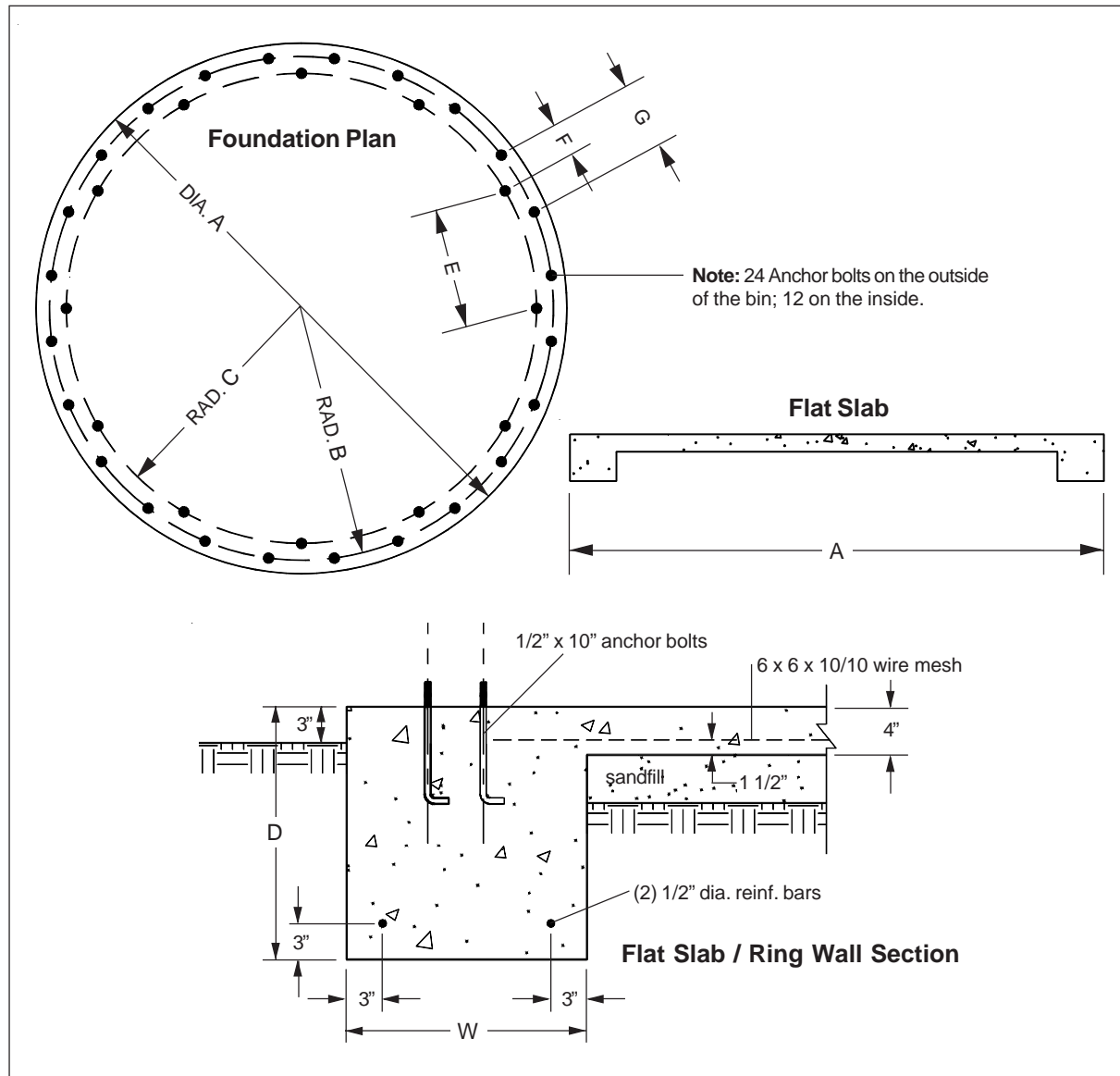
FOUNDATION NOTES:

1. The foundation site should be well drained and free of vegetation and/or debris.
2. Foundation(s) should be on undisturbed soil or engineered compacted backfill.
3. A soil and foundation (Geotechnical) investigation should be conducted for each site to confirm the soil bearing capacity. Foundation Design is based on an allowable soil bearing capacity of 3,500 psf.
4. The concrete shall have a minimum compressive strength of 3,000 psi. at 28 days.
5. Concrete should be allowed to cure 7 days before beginning the tank assembly and 28 days before filling the bin.
6. Concrete should be kept level to $\pm 1/8"$ in 10' and $1/2"$ across the diameter. High spots or debris should be removed prior to setting the bin.
7. Anchor bolts need to be properly located based on the table, found on page 17 of this manual, in order to keep the tank round.
8. All concrete reinforcing rod shall conform to ASTM A615, Grade 60.
9. Rebar should lap a distance equal to $(24 * \text{Rebar Dia.})$. Minimum allowable lap is 18"- i.e: #6 Rebar has a diameter of $6/8" = .75" * 24 = 18"$ or an 18" lap. Estimates for Rebar do NOT include allowances for the lap.
10. Foundation details in this manual are to be considered general in nature and are intended only as a guide. It is the owner's responsibility to provide an appropriate site and foundation design for the adequate support of the grain bin. MFS/YORK/STORMOR assumes no responsibility for results arising from these suggestions.
11. The detail below depicts a typical support pad for the aeration pad at the base of the bin. The dimensions should work for most applications, but may vary depending on the manufacturer of the fan and transition.



a TYPICAL AERATION FAN FOUNDATION PLAN

FOUNDATION PLAN AND SPECIFICATIONS



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Bin Dimension	dia A	radius B	radius C	D	E	F	G	W
Typical 36' Ezee Dry Bins	37' 3"	18' - 0 3/4"	17' - 8 1/16"	18"	9' - 1 3/4"	2' - 4 9/32"	4' - 8 19/32"	20"

Number of Anchor Bolts	Wire Mesh Square Foot	Concrete Cubic Yards	Reinforcing Rod Lin. Foot	Number and Size of Rod
36	1060	21 1/2	228	2 - #4



Important Pre-assembly Info

SIDEWALL SHEET IDENTIFICATION:

The bin wall sheets are color coded on the end of the sheets for easy reference as follows:

Red	-	17 Gage	Black	-	12 Gage
Blue/Yellow	-	15 Gage	Orange	-	11 Gage
Yellow	-	14 Gage	Brown	-	10 Gage

To determine the number of sheets per ring, divide the bin diameter by three: (ie: 36' diameter bin divided by 3 = 12 sheets per ring.) Note: there are 36 roof sheets.

BIN HARDWARE AND WHERE IT IS USED:

#12 x 3/4" self drilling screw -

Used to attach the flashing sealer to the flashing.

1/4" x 3/4" bolts and flange nuts -

Used to bolt the dump hoppers to the plenum sheets.

Used to bolt the dump chutes to the dump hoppers (w/ 2 nuts).

5/16" x 1" bin bolts with seal washer and nuts -

Used in bin sidewall sheets and roof sheets.

Used around the door.

Used on the stiffeners.

Used at the door and step across platforms.

Used at the perforated and 10 gage skirts.

Used at the grain bands.

Used at the plenum sheets.

5/16" x 1 - 1/4" bin bolts with seal washers and nuts -

Used to bolt the bottom sidewall sheet to the base angle.

Used to bolt the purlin mounting angle to the sidewall.

5/16" x 2 3/4" bolts and nuts -

Used to bolt the plenum sheets to the plenum rafters at the grain band posts.

5/16" x 1" carriage bolts

Used to bolt the stiffeners together

5/16" flange nuts -

Used under all roof ribs and at plenum sheets.

Used at the perforated roof flashing.

Used at the grain bands.

Used at the stiffeners.

Bin Hardware, continued

- 3/8" x 1" hex bolts, flat washers and nuts -
 - Used to assemble the fan platform.
 - Used at the winch on batch units.
- 1/2" x 1 - 1/2" hex bolts, flat washers and nuts -
 - Used to bolt the intermediate purlins to the purlin mounting angles.
- 1/2" x 2" hex bolts, lock washers and nuts -
 - Used at the pulleys.
- 1/2" x 10" anchor bolts, washers and nuts -
 - Used to secure the bin to the foundation.
- 3/4" x 1 - 1/2" hex bolts, nuts -
 - Used to bolt the main purlins to the center collar and top stiffener.
- Sealer tape -
 - Used on bin wall seams (one strip vertically and 6-12" horizontally).
 - Used both vertically and horizontally around door frame.
- Roof eave clip -
 - Attaches the top ring of the sidewall sheets (place on the outside). The top set of holes puts the roof in a lowered position for a storage application and the bottom set puts the roof in a raised position to facilitate drying.
- Roof cap hardware -
 - Roof cap slide rod bracket.
 - Roof cap hold down bracket.
 - Roof cap slide rod tab.
- Roof manhole hardware -
 - Manhole hinge.
 - Manhole hinge bracket.
 - Manhole latch catch.
 - Manhole latch side.
 - Manhole latch bushing.
- Door hardware -
 - Outer door clip.
 - Striker plate.
 - Door T-handle.
 - #8 x 3/8" screw.
 - #8 external tooth lock washer.
 - #8 - 32" hex nut.
 - 1/4" x 1/2" hex bolt and flange nuts.



**UNDER NO CIRCUMSTANCES SHALL ANY OTHER BOLT
BE SUBSTITUTED FOR THOSE SUPPLIED BY
MFS/YORK/STORMOR**



Ezee Dry Assembly

GENERAL ASSEMBLY INSTRUCTIONS

20

Assembly

NOTE: Look over the ladders sections of this manual on pages 42 - 43 and 60 - 63 before building the bin. It offers important information for planning the bin's layout and construction.

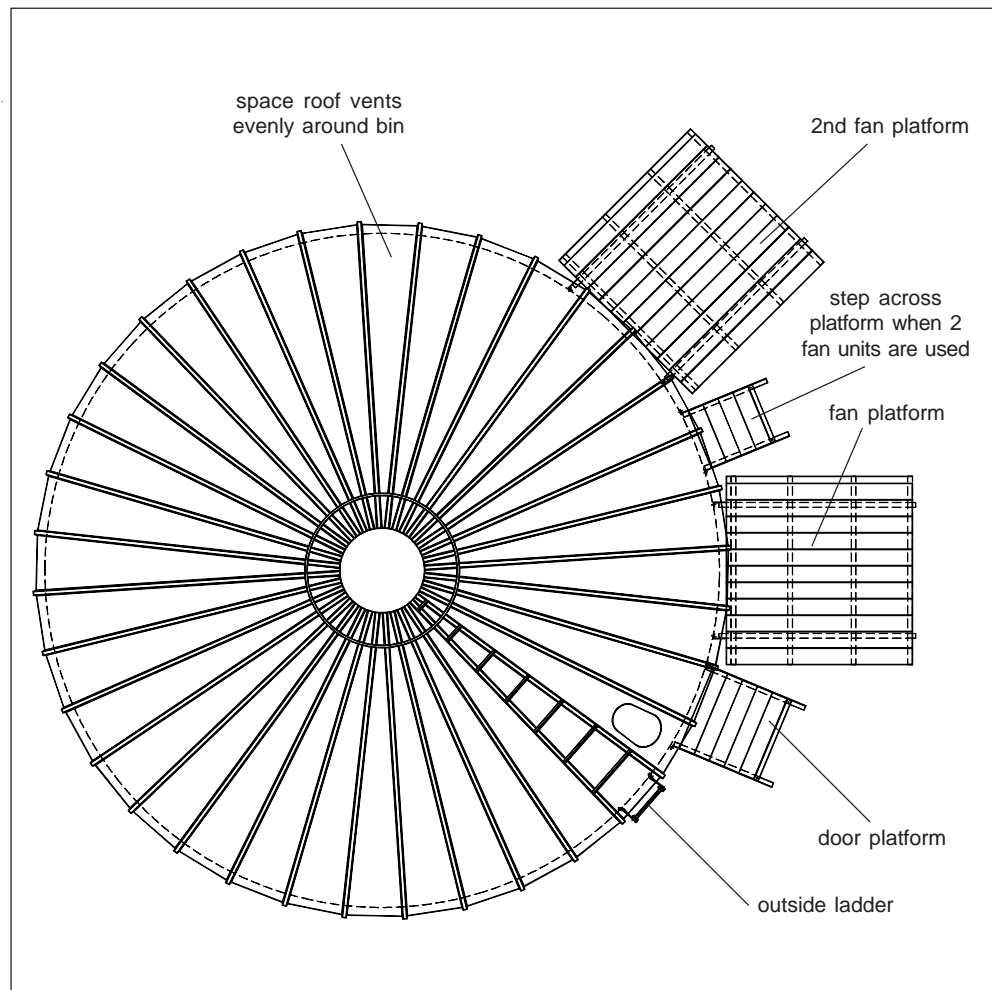
1. Complete the foundation. See the foundation section earlier in this manual.
2. Set the sidewall sheets out near the pad in preparation for assembly.
3. Plan for the ladder location.
4. Bolt together the top three rings of the bin.
5. Connect the top 10 gage z-bar stiffeners to the vertical seams of the second sidewall ring (10 gage).
6. Using scaffolding or a stand, support the center ring assembly at the proper height.
7. Install the main trusses.
8. Add the stiffener tie rods.
9. Attach the jack beams between all main trusses.
10. Fasten the mounting brackets to the sidewall and bolt the intermediate purlins to the mounting brackets.
11. Install 10 gage skirt sections at the upper bottom side of the main trusses.
12. Secure the pulley angle to the center collar.
13. Connect the cross braces to the vertical angles of the main trusses.
14. Attach the dump hoppers, dump necks, and flashing to the perforated roof sheets.
15. Add the perforated roof sheet assemblies to the structure.
16. Bolt on the flashing between perforated roof sheets and the sidewall.
17. Attach the upper perforated skirt and center cone to the assembly.
18. Install the eave clips and support the peak ring on a stand at the proper height.
19. Fasten on the roof sheets, complete the roof, and assemble the manway door.
20. Assemble the grain band rings.
21. Attach the 68' cables and the chains to the center chain disks.
22. Build on the fan platform(s).
23. Complete the sidewall, adding the z-bar stiffeners as construction progresses.
24. Install the base angle and secure the bin to the anchor bolts.
25. Assemble the hydraulic pump unit if the bin comes equipped with one.
26. Add any other optional equipment included with the bin and finish construction.

BEFORE BEGINNING ASSEMBLY



IMPORTANT: Before construction of the bin is started: 1) Read and understand this manual. 2) Determine the locations for all accessories including the: access door, anchor bolts, ladder, manway, side draw, roof steps, fans, and any other auxiliary equipment. 3) In addition to these, consideration must be given to the location of the: electrical and gas service, control unit, winch/hydraulic unit, unloading auger, entry door, and any other equipment that may be involved. Please note that the control unit should be placed on the north or east side, out of direct sunlight.

21



a BASIC PLAN VIEW OF THE 36' EZEEDRY

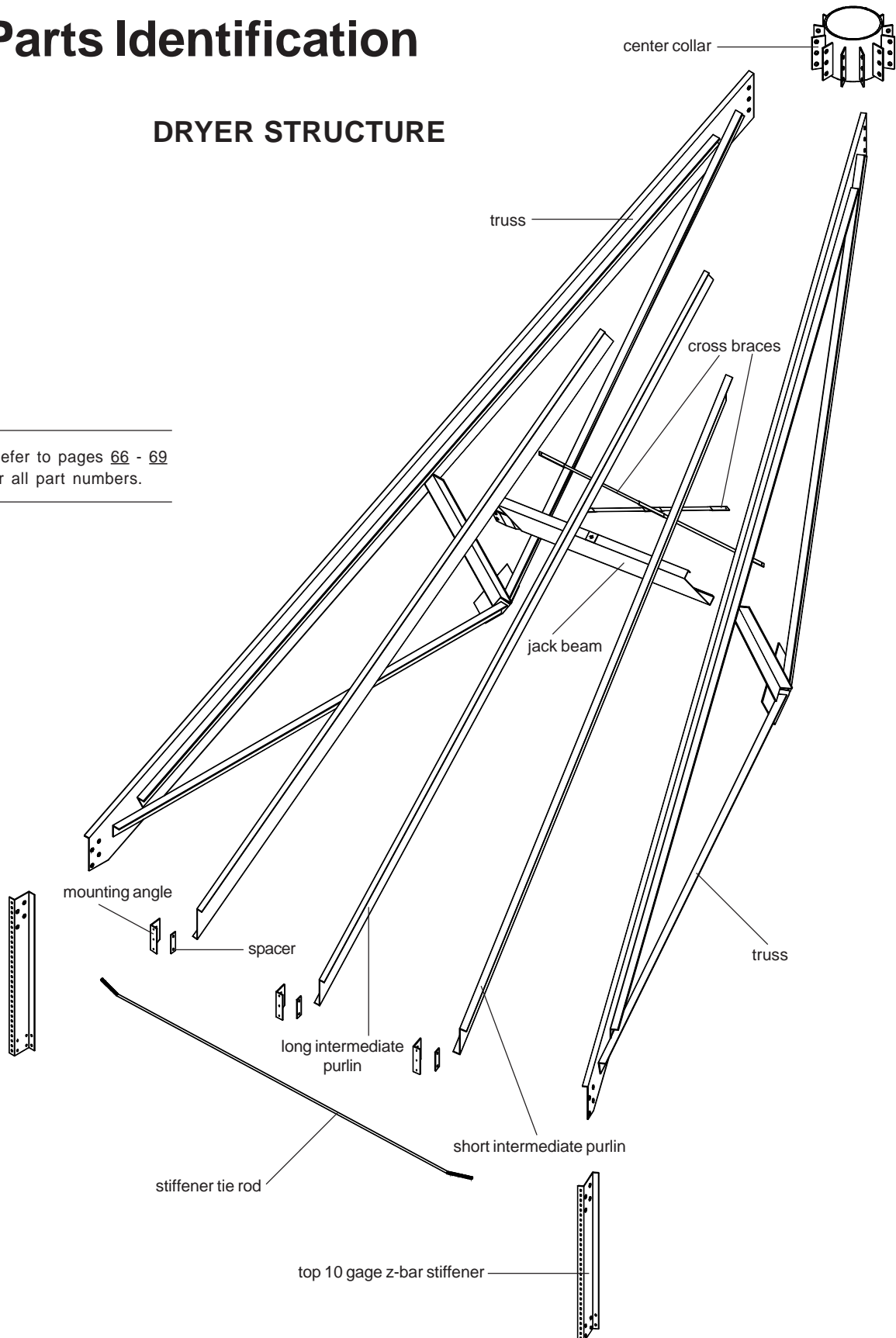


Parts Identification

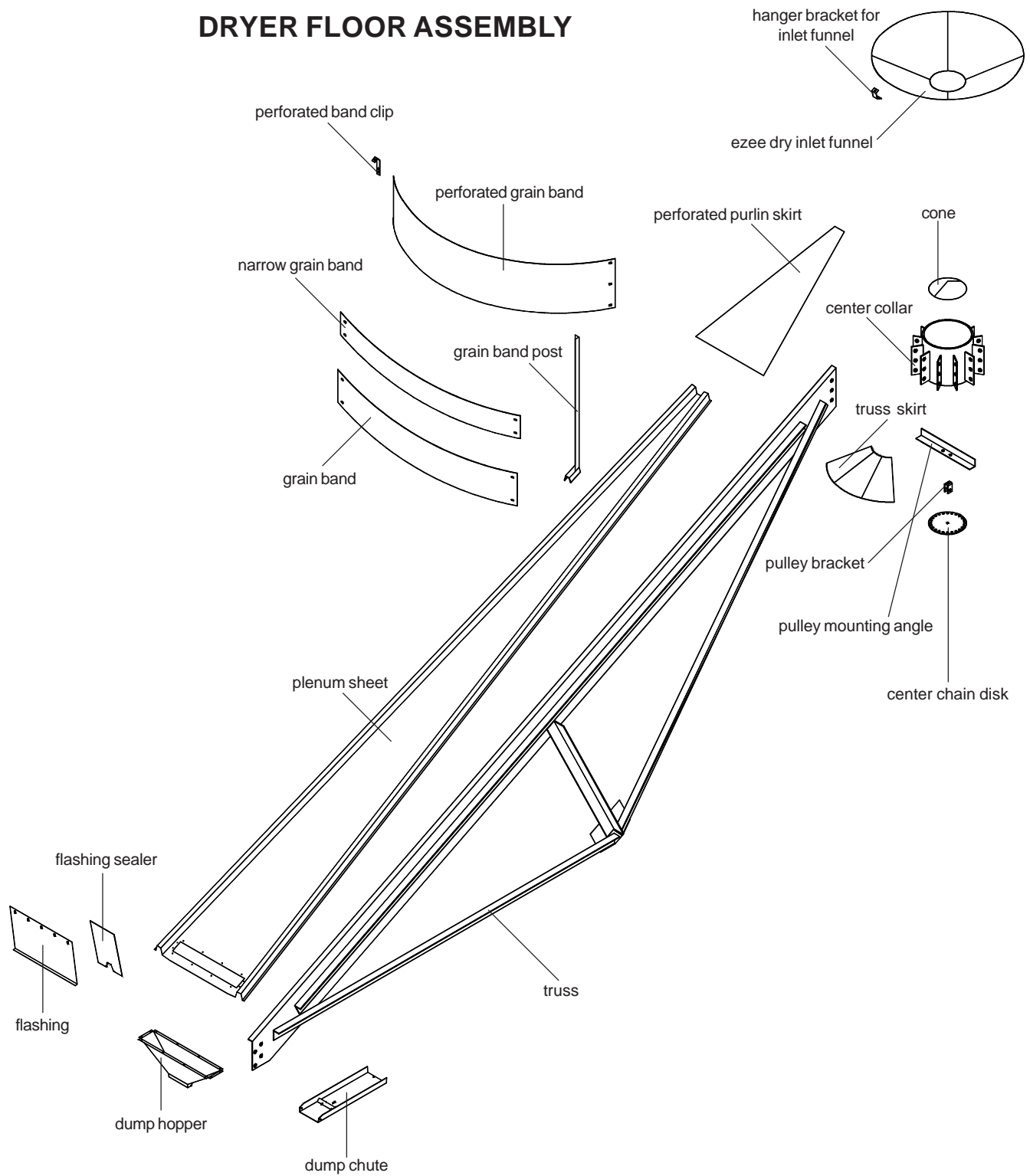
DRYER STRUCTURE

22

NOTE: Refer to pages 66 - 69
for all part numbers.



DRYER FLOOR ASSEMBLY





Sidewall Construction

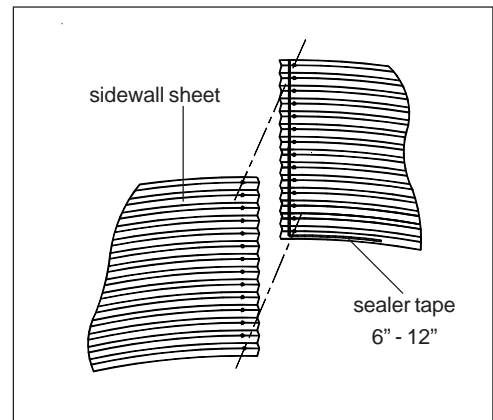


24

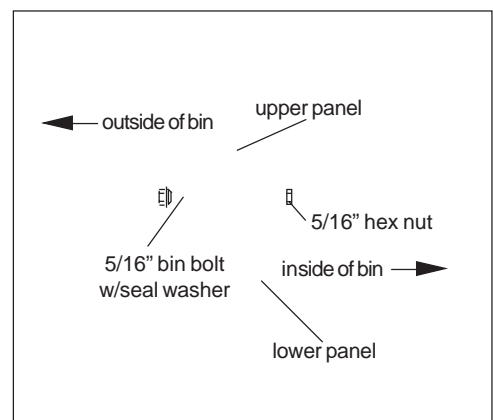
IMPORTANT!

Instructions to follow throughout the building of the sidewall

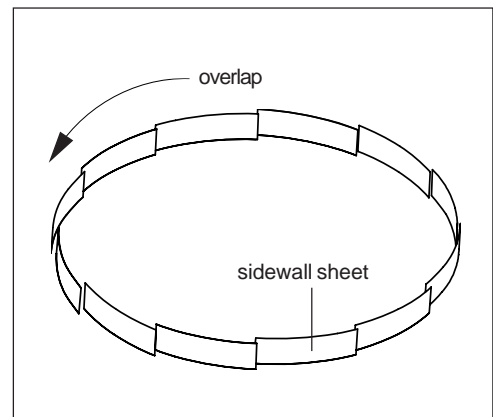
1. All sidewall sheets are color coded per the table on page 18 for ease of construction.
2. See the sidewall layout sheet table on page 59 for sidewall sheet gage and placement.
3. Always overlap the sidewall sheets in the same direction as shown (fig. c).
4. Use one row of sealer tape at all vertical joints and horizontally for 6-12" from the end of each sheet (fig. a). Wipe sheets clean before applying the tape.
5. Bolt sidewall sheets together with the bolt head and seal washer to the outside of the bin and the nut to the inside. At Stiffener locations the bolt direction is as indicated in fig. b on page 27.
6. The sheets should be staggered in halves. The halves measure ~56 1/4".
7. The top sidewall ring is hole punched differently. It is punched for the roof and does not have any stiffener hole punching.
8. The second ring is also punched differently for the dryer assembly (fig. a, page 26).
9. At horizontal seams, bolt lower sheets to the inside of upper sheets (fig. b).



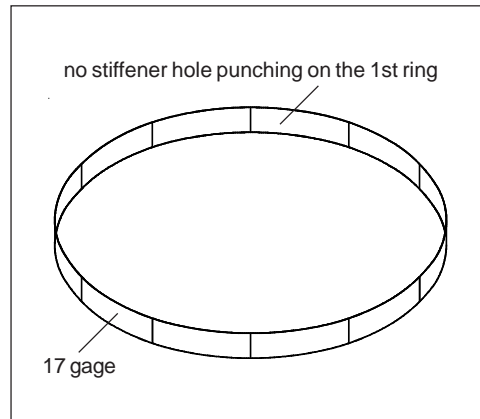
a SEALER TAPE AT SIDEWALL SEAMS



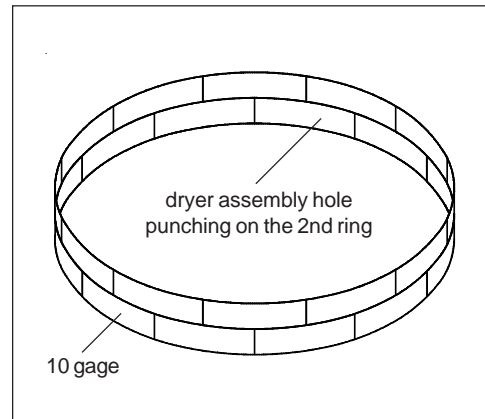
b HORIZONTAL SHEET SEAM



c SHEET OVERLAP ONE DIRECTION ONLY

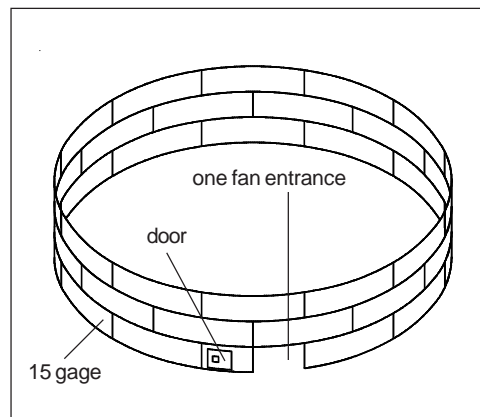


d BUILD THE TOP SIDEWALL RING

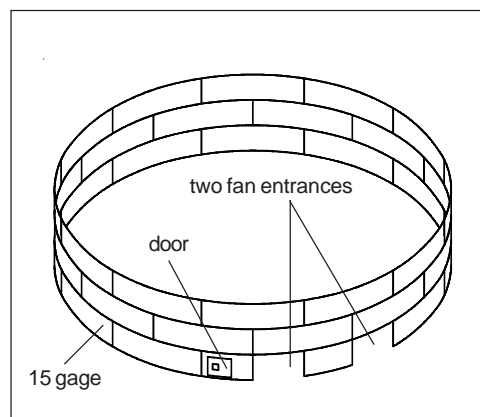


e ADD THE SECOND RING

25



f FOR BINS WITH ONE FAN ENTRANCE



g FOR BINS WITH TWO FAN ENTRANCES

1

set out bin sidewall sheets on the pad

Sort the sidewall sheets by gage according to the color code and layout table (page 59). Stand the sidewall sheets on edge in the order in which they will be used on the bin pad near the location where the sidewall will be built.

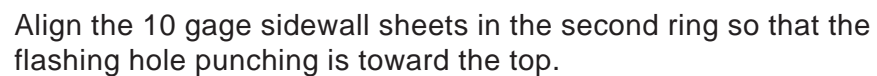
2

begin sidewall assembly

Build the top three sidewall rings (fig.s d-g and fig. a, page 26). Refer to the sidewall layout sheet table on page 59. Make sure to use the proper number and style of sheets so the diameter of the bin is correct. For Ezee Dry bin door and fan entrance space locations refer to figures f and g. At the stiffener locations install 5/16" x 1" bin bolts in the "inside corrugation valleys" of the vertical sheet seams at this time (see fig. b on page 27). Stiffener bolts will be added later in the "inside hill" holes of the sheets.



26



Dryer Assembly

3

fasten the top stiffeners

Bolt the twelve top 10 gage z-bar stiffeners to the sidewall at the vertical seams of the 10 gage sidewall ring as shown (fig. b). The top z - bar stiffener is 42 1/8" long.

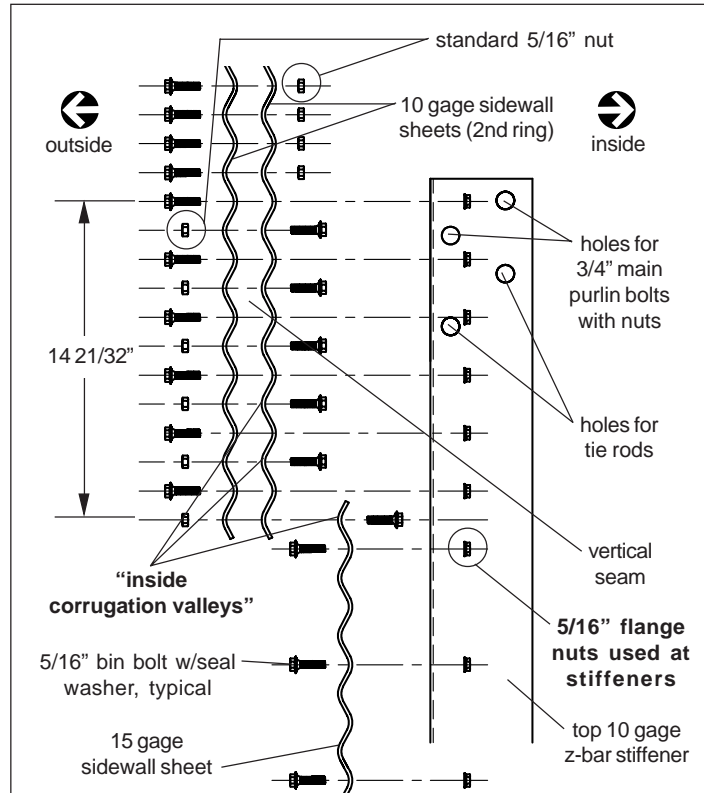
NOTE: Use 5/16" flange nuts at all stiffener locations on the side of the stiffeners.

NOTE: The two lower holes in the upper stiffener are for the tie rods.

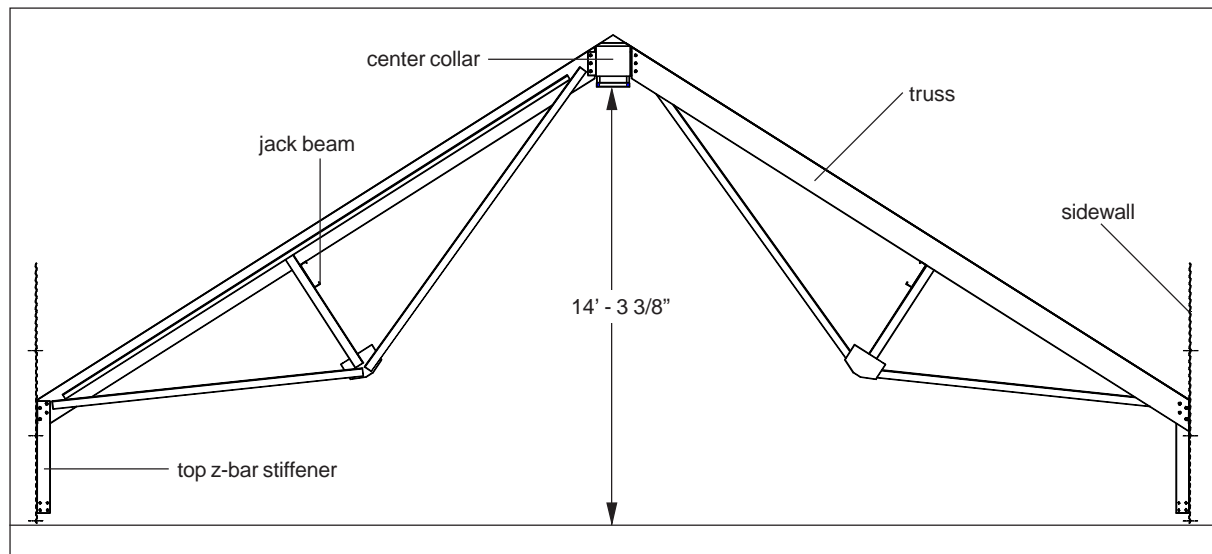
4

install the first truss

Set the center collar in the bin's center (fig. a, page 28) at the height shown (fig. c). Use a center jack platform. The center collar should be oriented so that the pulley mounting angle attachments are on the bottom. Insert a bolt through the first truss and the stiffener using either of the two top holes in the stiffener and truss (refer to fig. b, page 28). (The lower two holes are for stiffener tie rods.) Bring the top of the truss into position next its corresponding flange on the center collar. Insert a bolt through the flange and the truss to hold the truss in place and then install the rest of the bolts.



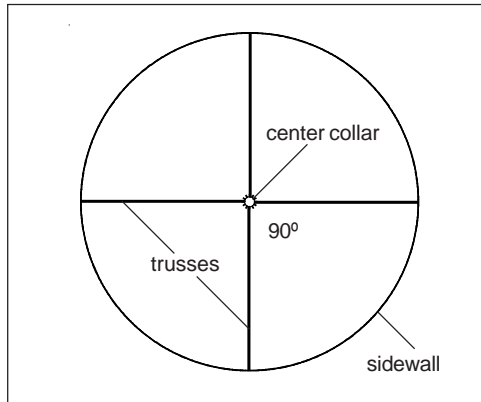
b TOP STIFFENER ATTACHMENT



c HEIGHT OF CENTER COLLAR



28



a ATTACH THE FIRST FOUR TRUSSES

5

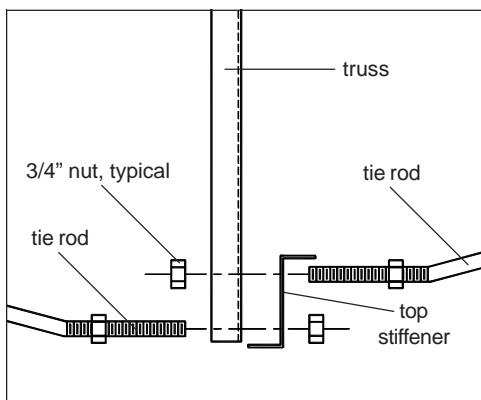
install the trusses

Bolt the first four trusses on at right angles around the bin to stabilize the assembly (fig.s a and b) and then finish installing the rest of the trusses.

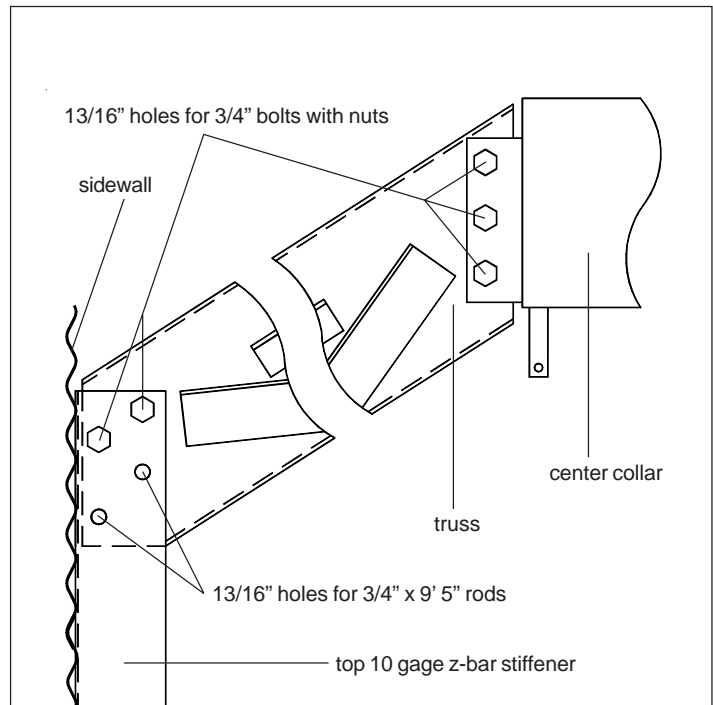
6

connect stiffener tie rods to stiffeners

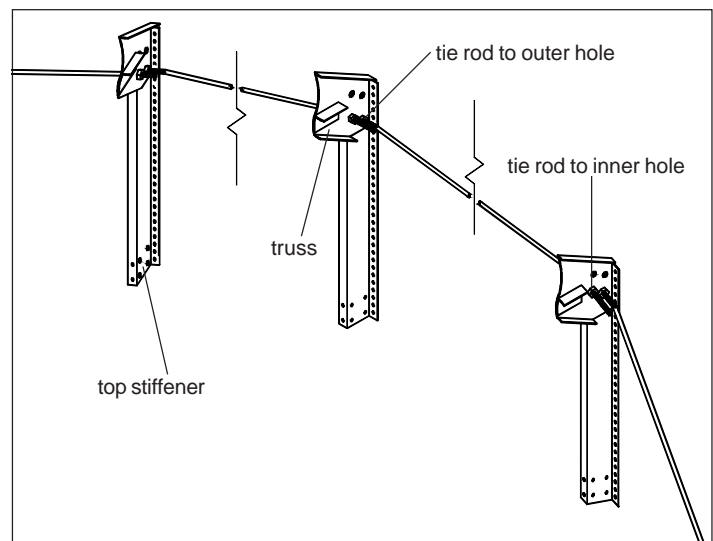
Install the stiffener tie rods between the trusses alternating the holes for each rod (fig. c and e, page 29). Thread a nut on to each end of the rod. Insert the rod through the holes in the stiffener and truss. Thread a 2nd nut on the end of the rod and snug this nut up to put tension on the rod. Install all rods, then securely tighten all nuts (fig. d).



d TIE ROD, STIFFENER TRUSS CONNECTION



b TRUSS TOP AND BOTTOM CONNECTION DETAIL

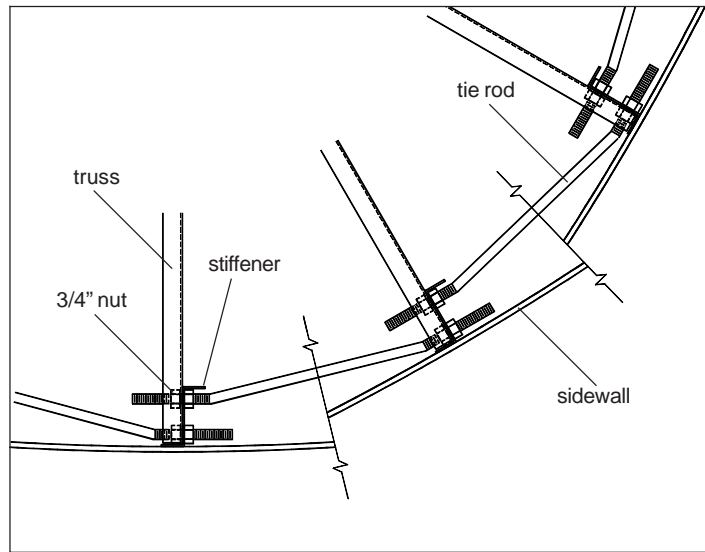


c PROPER TIE ROD INSTALLATION

7

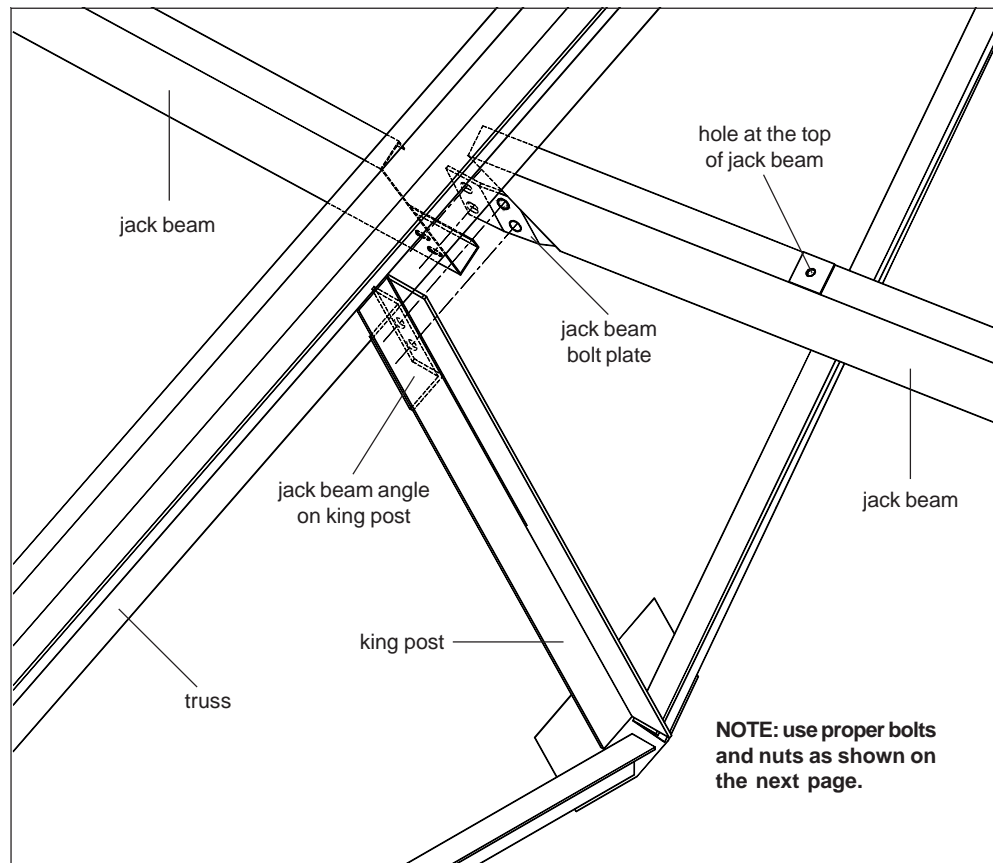
attach jack beams between trusses

Bolt on jack beams between all main trusses (fig. f and fig. a, page 30). Leave the bolts loose at first to insure an easy installation.

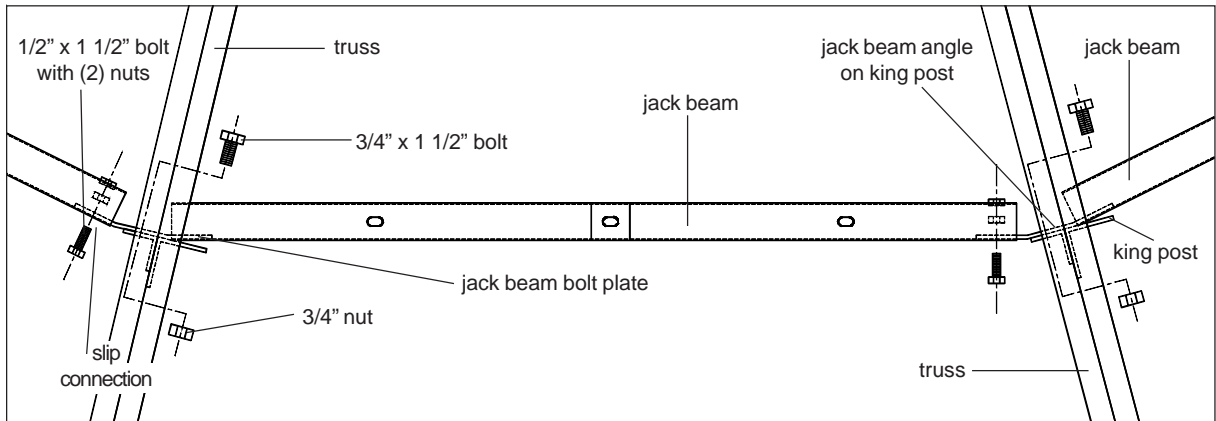


e STIFFENER AND TIE ROD ARRANGEMENT FROM ABOVE

29



f JACK BEAM TO TRUSS CONNECTION



a JACK BEAM TO TRUSS CONNECTION FROM ABOVE

8

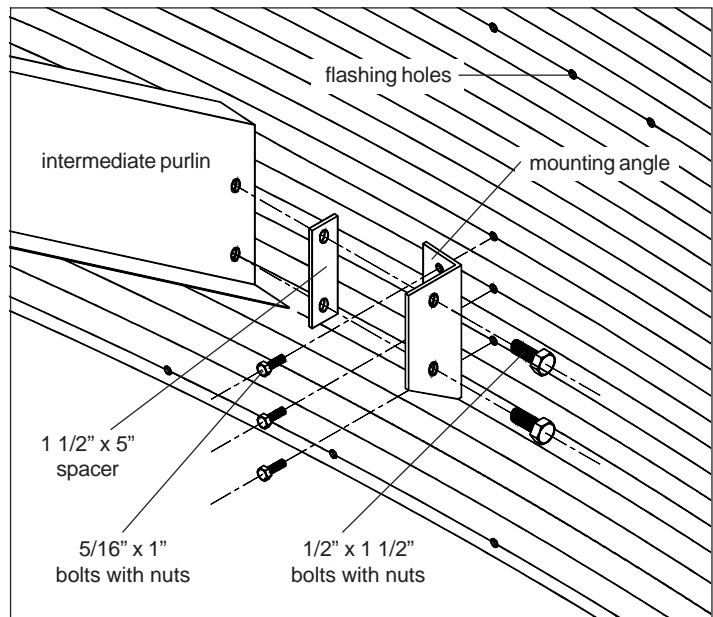
properly secure bolts on jack beams

After setting the last jack beam into place tighten all 3/4" bolts that connect the jack beams to the main trusses. The 1/2" bolts which connect jack beams with each other are tightened differently. Tighten the first nut down far enough to make a good connection but not far enough to restrict movement. The second nut is used as a locknut. **This is important so that the connection is allowed to move as the bin is loaded.**

9

intermediate purlins connect to sidewall

Between each 2 trusses, bolt the purlin mounting angles to each of the three locations provided on the 10 gage sidewall sheets (fig. b). **Be sure that the sidewall sheet is orientated correctly so that the flashing holes are above the mounting angle holes.** Bolt two 14' intermediate purlins and one 16' intermediate purlin to these brackets while also resting them on the jack beams (fig. c and d, page 31). Place the 1 1/2" x 5" spacers between purlins and mounting angles.



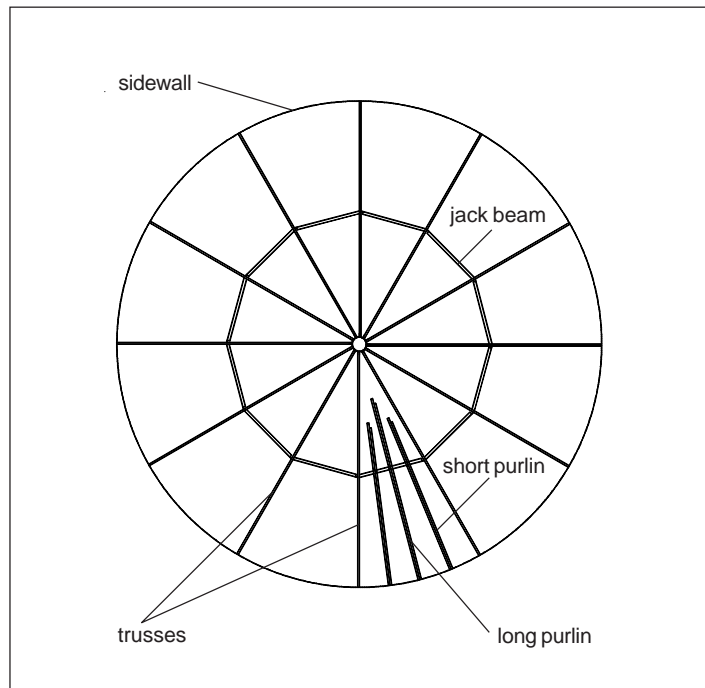
b INTERMEDIATE PURLIN TO SIDEWALL CONNECTION

10

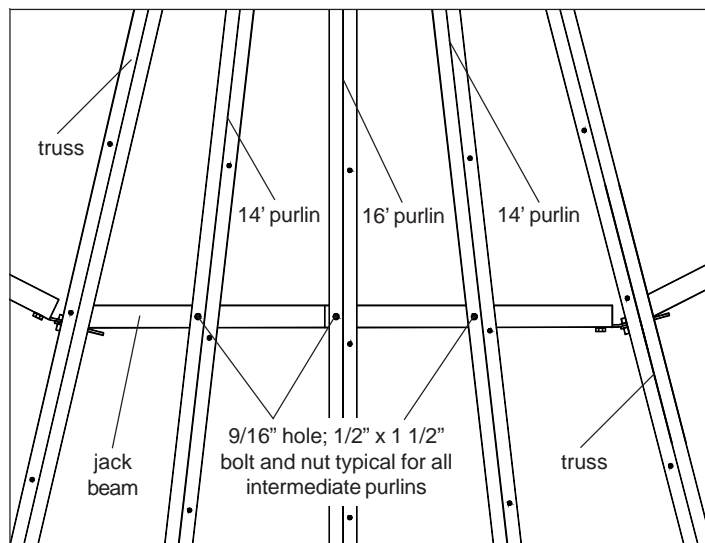
bolt intermediate purlins to jack beams

Use 1/2" x 1 1/2" bolt and nuts to attach the intermediate purlins to the jack beams as shown (fig. c and d). Complete the installation around the entire bin.

31



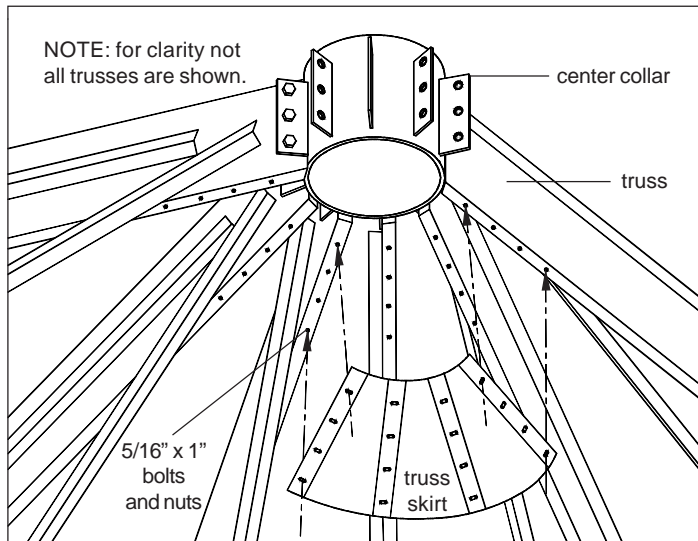
(c) INTERMEDIATE PURLIN LOCATION TOP VIEW



(d) PROPER PURLIN INSTALLATION



32



a ATTACHING THE TRUSS SKIRT FROM BELOW

11

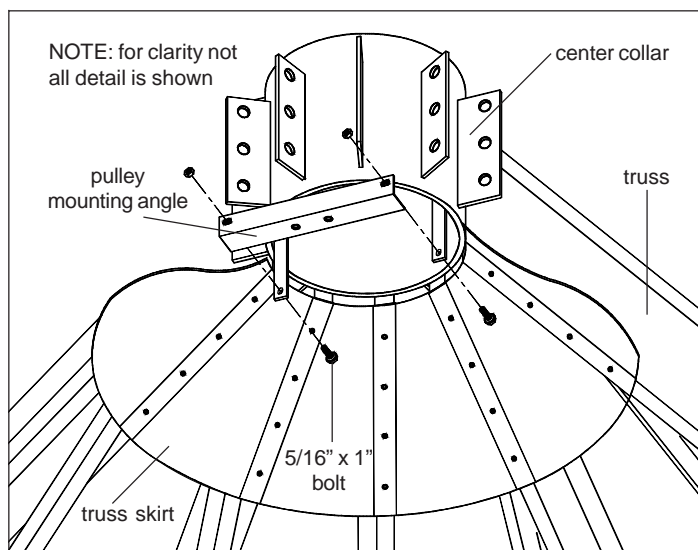
attach truss skirts from underneath

Bolt the four 10 gage skirt sections to the underneath side of the trusses at the peak as shown in fig. a. **It is important that all 48 bolts are installed through the 10 gage skirt!**

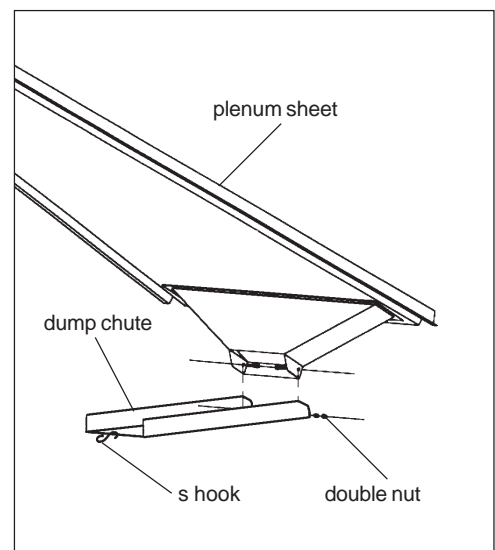
12

attach the pulley mounting angle

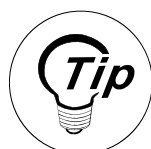
Bolt on the pulley mounting angle to the center collar as shown (fig. b).



b BOLT THE PULLEY MOUNTING ANGLE TO THE CENTER COLLAR



c INSTALL DUMP HOPPER CHUTES



If you are using a center jack which projects through the center collar we recommend waiting to do step 12 until the bin roof is complete (the uppermost or standard roof).

13

install cross braces between trusses

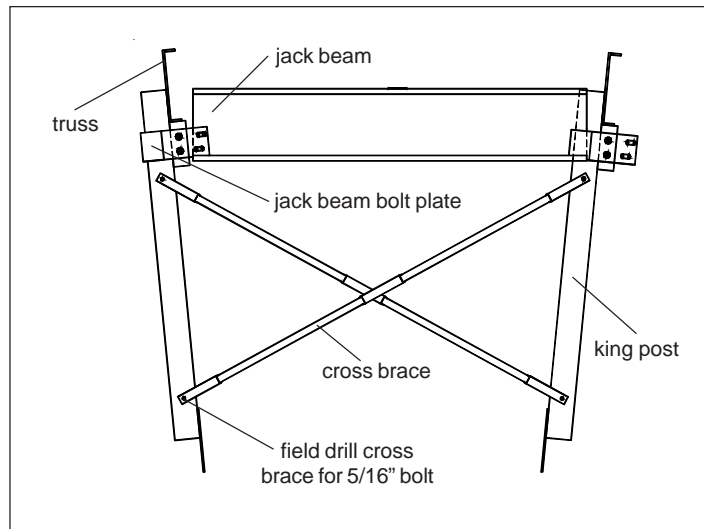
Bolt the cross braces to the king posts of the main trusses crossing them as shown (fig. d). After the top bolt is inserted through the cross brace and truss, locate, clamp and field drill the bottom bolt hole. **Don't pull trusses together when installing the braces!**

33

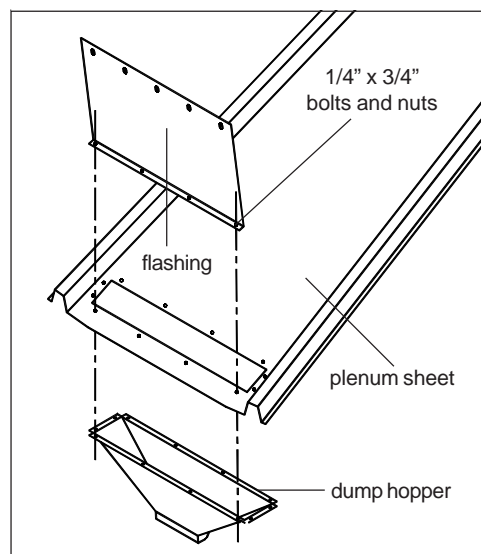
14

preassemble flashing & dump hopper

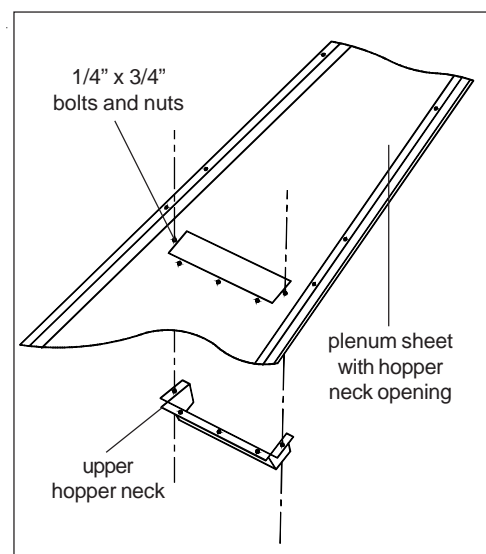
Before installing plenum sheets, add the flashing and dump hoppers to each sheet (fig. e). Bolt the sidewall flashing together with the plenum sheets and dump hoppers with 1/4" x 3/4" bolts and nuts. Install the upper dump necks in the sheets that require them (fig. f). Note: Dump hoppers and necks fasten below plenum sheets. Attach dump chutes to dump hoppers and dump necks using 1/4" x 1" bolts on each side (fig. c, page 32). Double nut the bolts making sure the chute swings up and down freely. Fasten an "S" hook to the end of each chute.



d FASTENING THE CROSS BRACES



e ADD FLASHING AND DUMP HOPPERS



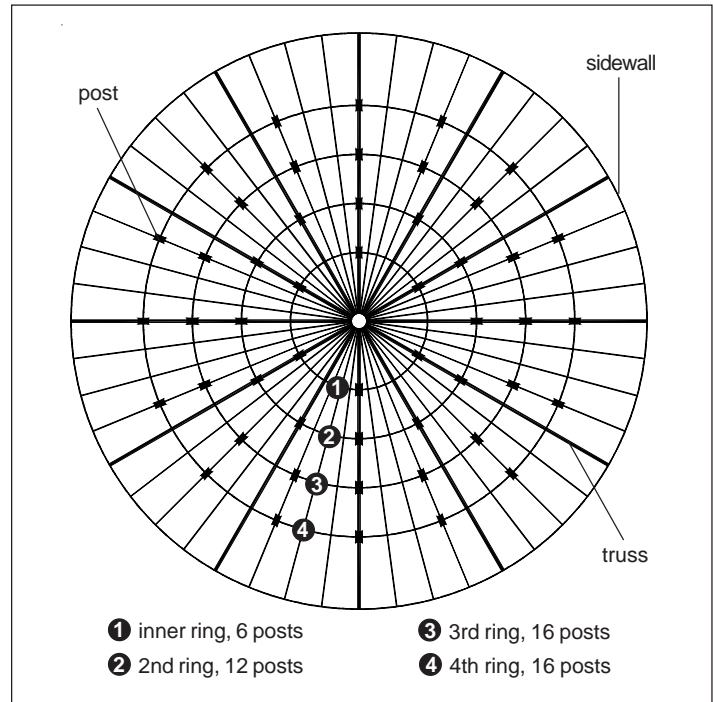
f ADD UPPER DUMP NECKS



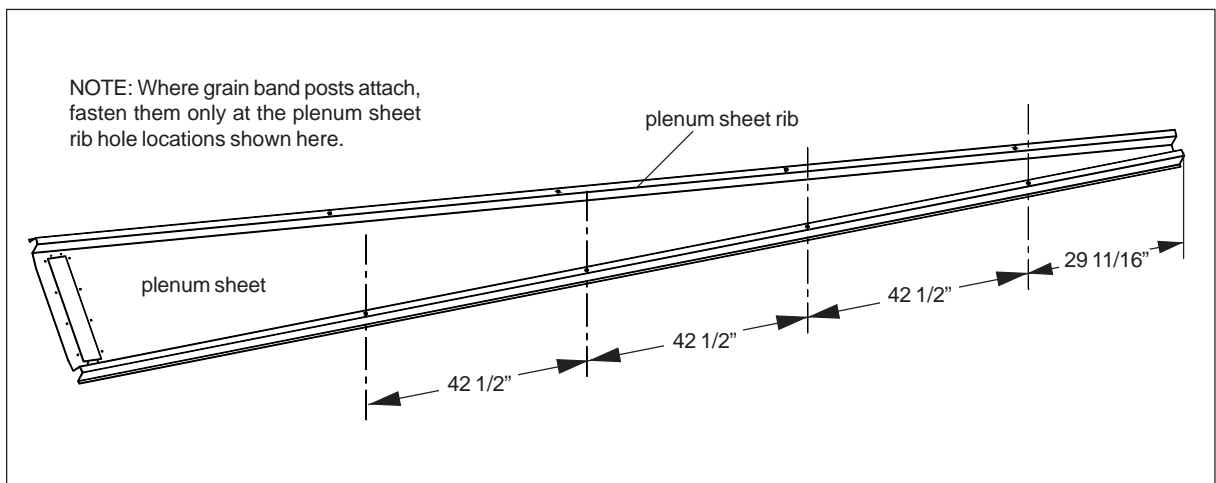
15

begin adding plenum sheets & posts

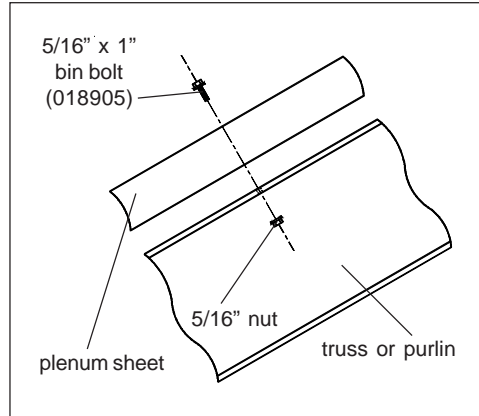
Start adding plenum sheets by setting the corresponding rib holes over the proper holes in the trusses and purlins (fig.s c & d, page 35). Bolt plenum sheets to purlins and trusses using 5/16" x 1" bolts. Use 5/16" x 2 3/4" bolts at grain band post locations (bolt from below; nut on top). Make sure plenum sheets with upper dump necks are evenly spaced around the bin. Place grain band posts in the correct locations (fig.s a & b).



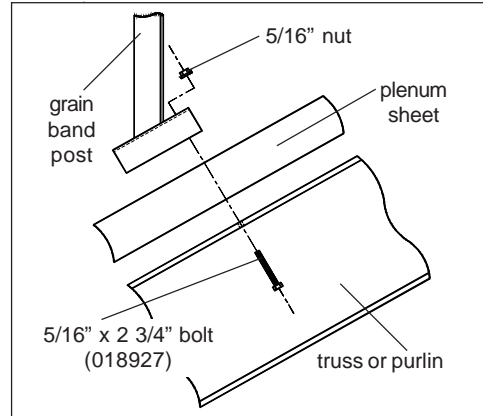
a GRAIN BAND POST LOCATIONS, TOP VIEW



b GRAIN RING LOCATIONS



c BOLTING ON THE PLENUM SHEET



d ADDING THE GRAIN BAND POST

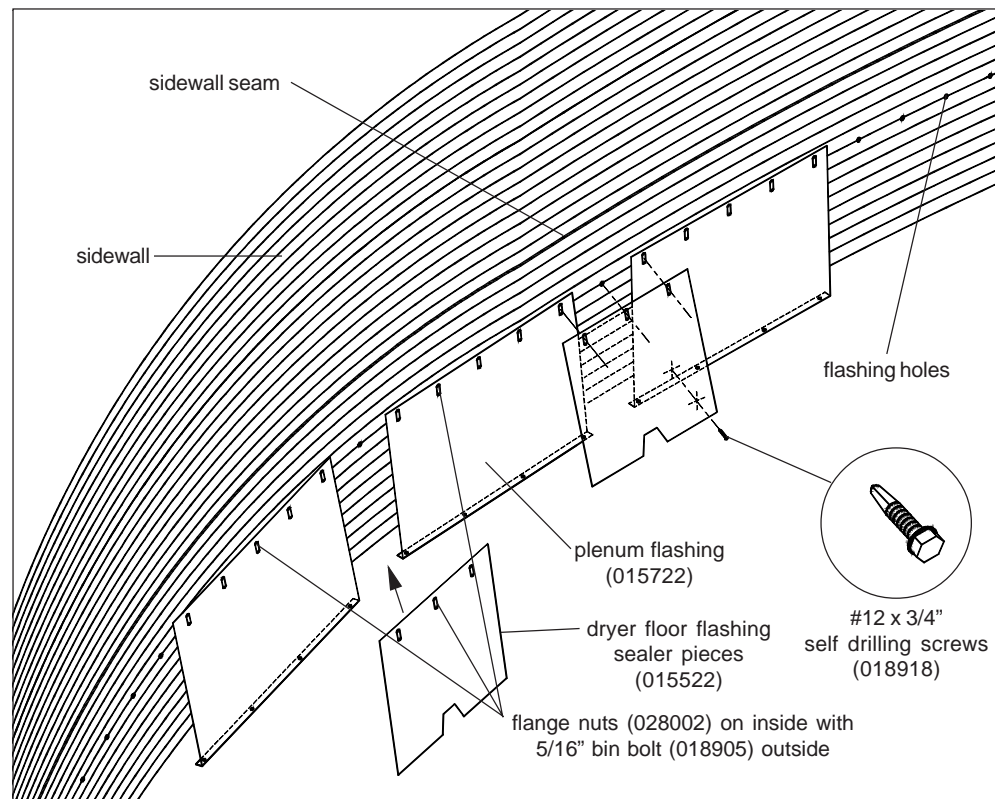
35

16

fasten plenum flashing to the sidewall

Connect the plenum flashing to the sidewall using 5/16" x 1" bin bolts and

flange nuts (fig. f). Place the flashing sealer pieces over the plenum sheet ribs and fasten them to the flashing with #12 self drilling screws.



e FASTEN THE FLASHING AND SEALER FLASHING

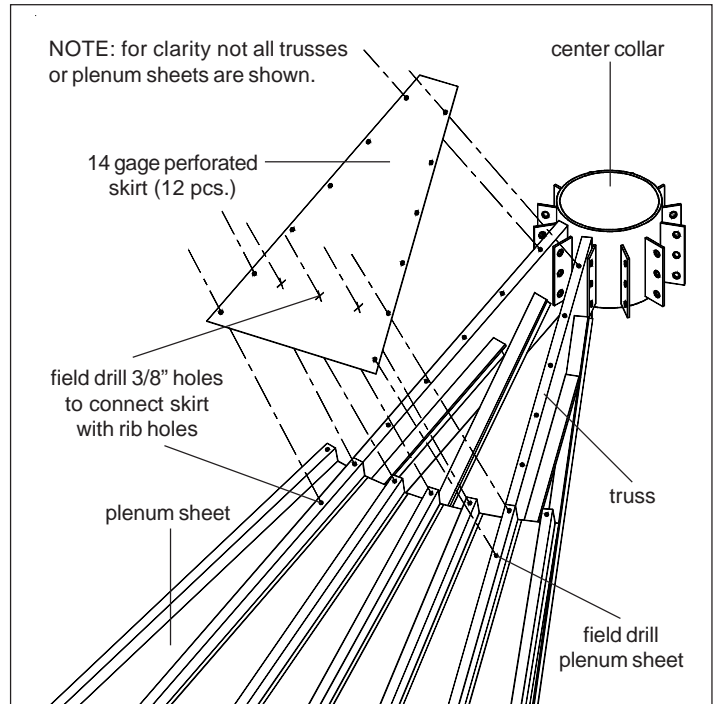


36

17

fasten the perforated skirt sections

Bolt the 14 gage perforated skirt sections to the main trusses above the plenum sheets using the holes provided (fig. b). After the skirt sections are bolted to the trusses at the lap seams locate and drill the remaining (rib/skirt connection) holes through the skirts. **It is important that all 72 bolts are installed through the perforated skirt into the trusses.**



a FASTEN THE PERFORATED SKIRT SECTIONS TO THE TRUSSES

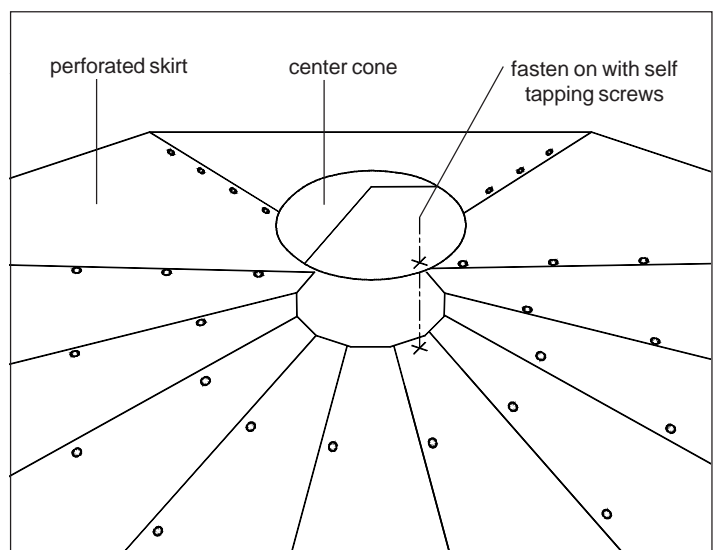


If you are using a center jack which projects through the center collar we recommend waiting to do step 18 until the bin roof is complete (the uppermost or standard roof).

18

secure center cone to the peak

Set the perforated center cone in place and fasten it to the perforated skirt using self-tapping screws (fig. a).



b USE SCREWS TO PUT ON THE CENTER CONE

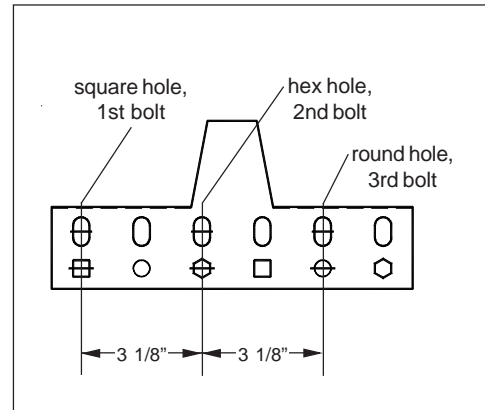
Build the Roof

19

choose roof position / eave clip position

Roof Position: Eave clips allow the roof to be installed in an elevated or closed position. Decide which position best fits your grain handling needs. When installing clips for the closed position, the obround holes are used; and for roofs in the elevated position, the square, hex and round holes will be used (fig. c). Three (3) bolts will be used per eave clip at the positions in the clip as shown. See the directions in the following step for eave clip spacing. All eave clips are to be placed on the outside of the corrugated wall sheets (fig. d).

NOTE: If Vac-U-Vents are used, do not use the upper roof position.

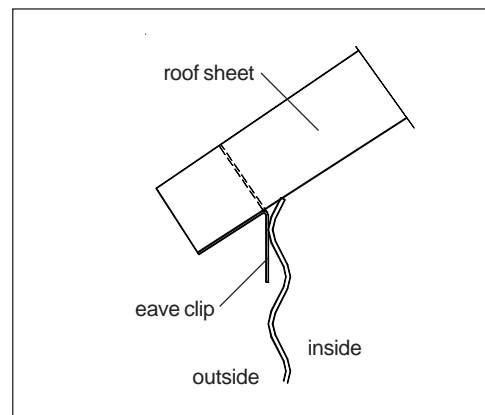


c EAVE CLIP BOLT POSITIONS

20

install all the eave clips

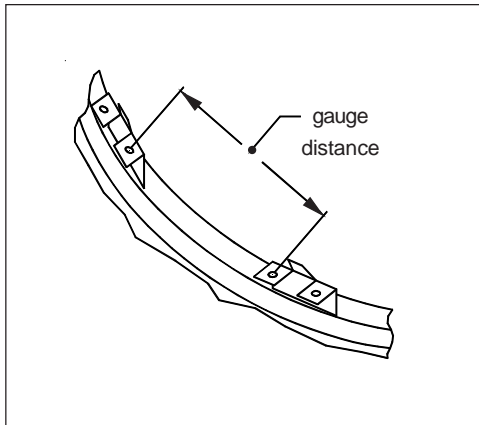
Follow these steps and attach the eave clips in a counter clockwise direction around the bin. 1) Fasten the first eave clip starting with the first square hole in the clip as shown in figures c and d. 2) Skip nine (9) holes and fasten the second clip starting with the first square hole in the clip, as shown in figure a. Repeat step 2 until all clips are in place.



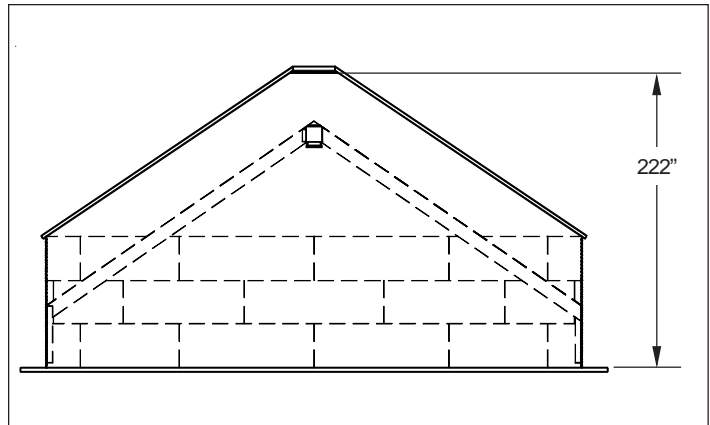
d EAVE CLIP POSITION



The same results can be obtained using a strap or angle gauge with 5/16" pins or 3/8" holes at 31 15/16" centers (see fig. a, page 38).



a CENTER TO CENTER DISTANCE



b PEAK RING HEIGHT ABOVE CONCRETE

21

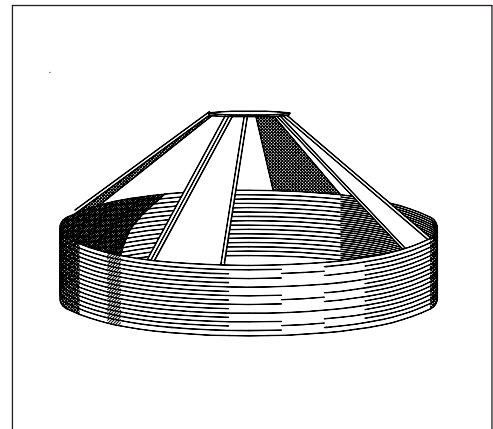
support the peak ring at proper height

After the eave clips have been installed, support the peak ring at a height of 222" above the concrete (fig. b).

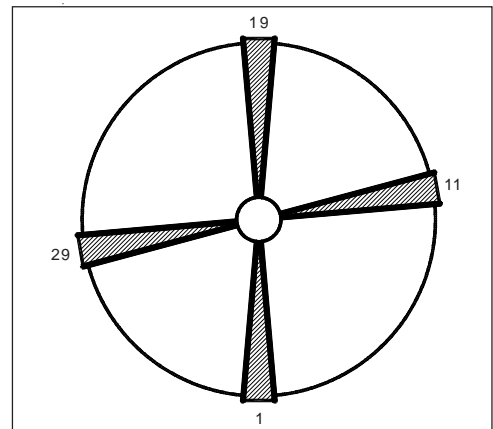
22

begin installing roof sheets

There are 36 roof sheets on the 36' Ezee Dry Bin. There are several methods to successfully complete the roof assembly, but in order to maintain an even weight distribution on the peak ring we recommend the following procedure. Regardless of the method chosen the peak ring **MUST** be level and we strongly recommend using an adjustable center jack. Once the eave clips have been fastened to the sidewall, install the numbers 1, 11, 19, and 29 roof sheets (fig.s c and d). Use 5/16" x 1" bin bolts at both the peak ring and eave clips.



c FIRST ROOF SHEETS PLACEMENT

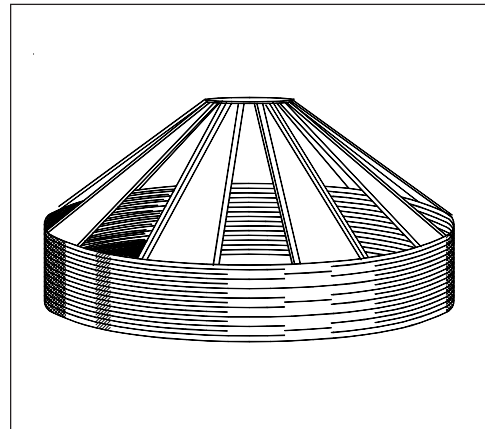


d TOP VIEW 1ST ROOF SHEETS LOCATION

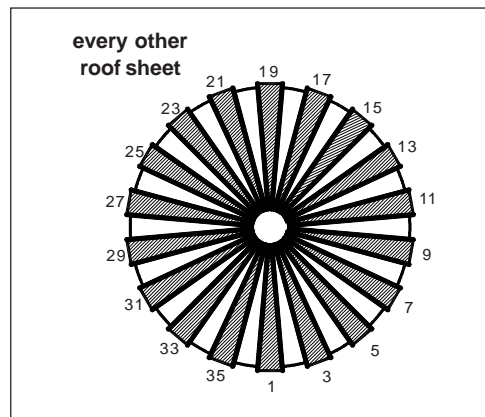
23

attach every other roof sheet

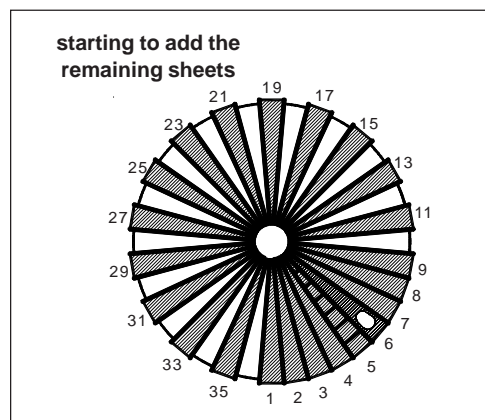
Install every other odd numbered roof sheet, leaving one roof sheet space between each sheet installed (fig.s e and f). Then add the remaining roof sheets (fig. g). If the bin has Vac - U - Vents leave open the number of Vac - U - Vent roof sheet spaces needed at even intervals around the bin. On all roof sheets, be sure to leave out the topmost rib bolts for roof cap flashing and the bolts shown in step **25** at this time.



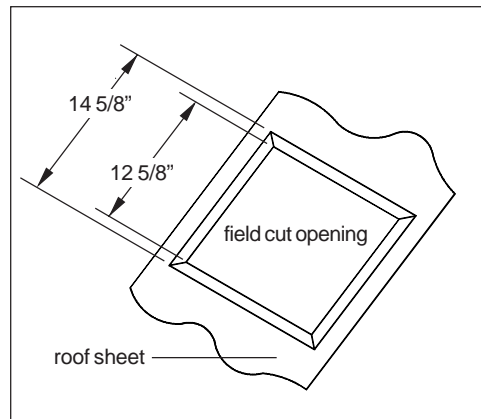
e EVERY OTHER ROOF SHEET INSTALLED



f INSTALL ODD NUMBERED ROOF SHEETS



g INSTALL THE REMAINING ROOF SHEETS

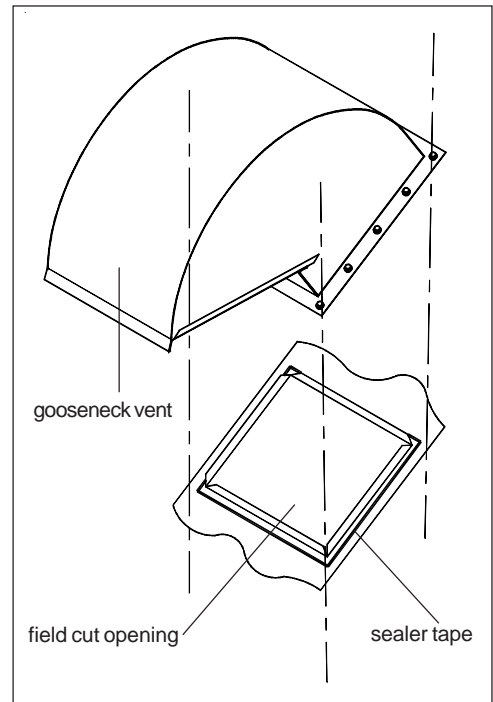


a FIELD CUT GOOSENECK ENTRANCES

24 (option 1)

attach gooseneck vents

If gooseneck vents are used, field cut entrances for the vents (fig. a). Then attach the vents to the sheets using the field cut openings as shown (fig. b). Field drill the roof sheet holes needed for the connection.

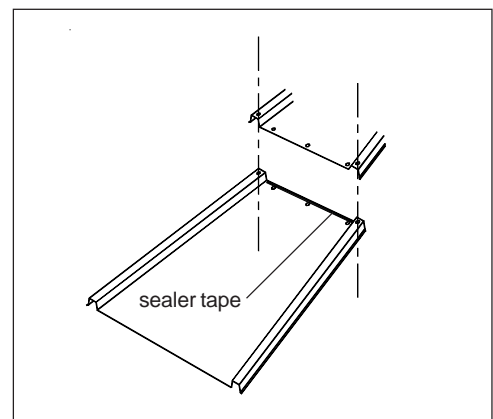


b ATTACH THE GOOSENECK VENTS

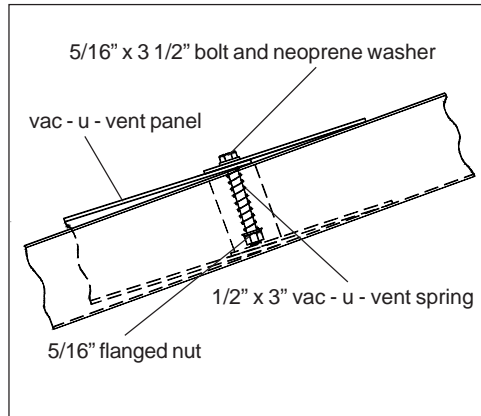
24 (option 2)

put together the vac - u - vents

If Vac - U - Vents are used, first bolt the upper and lower sections together as shown, using a piece of sealer tape between the two pieces (fig. c). The upper section must overlap the lower section. Bolt this assembly and all other sheets in the remaining roof spaces, leaving out the top row of rib bolts as well as those shown in step 25. At the ribs where Vac - U - Vents join, use a 5/16" x 3 1/2" bolt with a metal backed neoprene washer, a spring, and flange nut (fig. d, page 41). Bolt the Vac - U - Vent angle to the lower sheet and the coupling to the angle. Secure the vent chain to both the sidewall and Vac - U - Vent angle (fig. e, page 41).



c USE SEALER TAPE ON VAC-U-VENTS

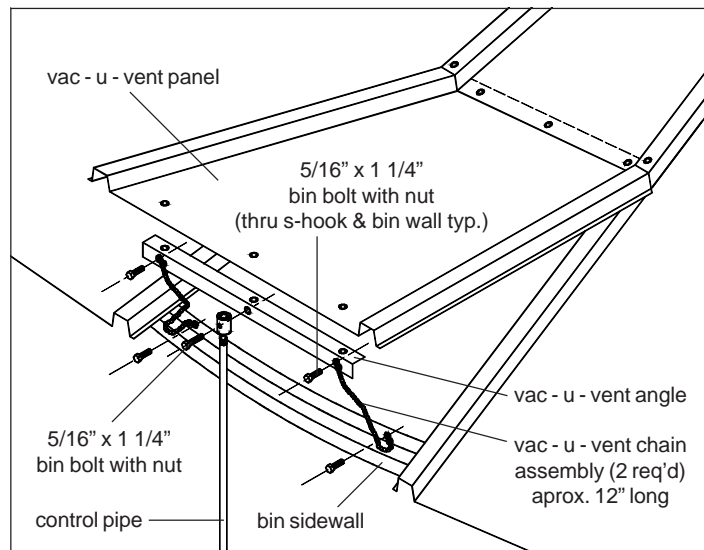


d BOLT VAC-U-VENTS TO RIBS

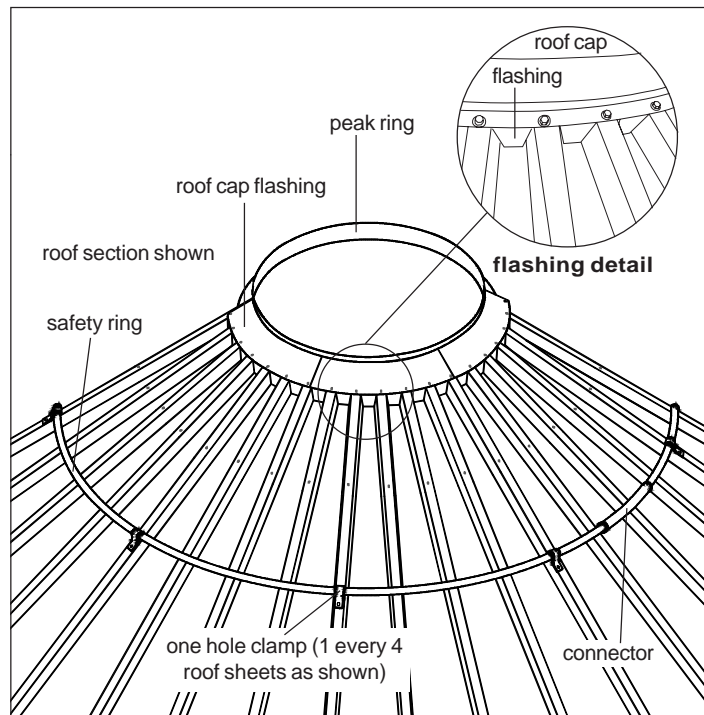
25

install the safety ring and flashing

In addition to the top row of rib bolts, leave out every fourth bolt from the third row of rib bolts for the safety ring. Add the safety ring to the roof using the single hole clamps provided (fig. f). Join the three safety ring sections with a connector. Fasten the (6) six roof cap flashing pieces.



e VACUVENT ASSEMBLY



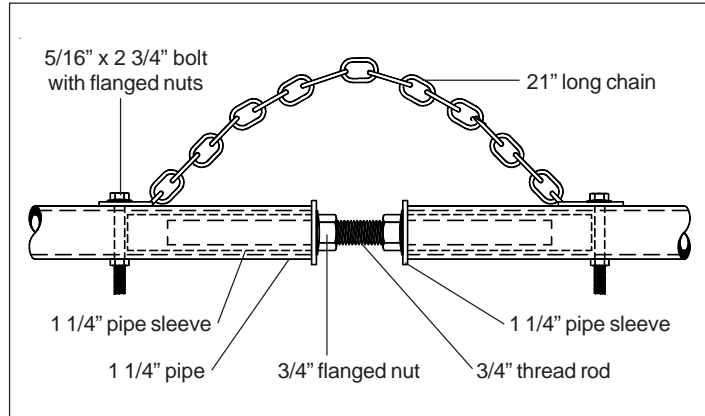
f ADD THE SAFETY RING AND ROOF CAP FLASHING



26

install the reinforcing ring

See figures a and b. The 5th and 6th roof rib holes (3" apart) from bottom of roof sheets are for the clamps (P/N 011476). Add one (1) pipe segment (P/N 011437) and clamp loosely. Place the pipe so that the joints will be centered between two (2) ribs. Add two (2) sleeves (PN 011477) and one (1) threaded rod (PN 011475) at each joint as shown. Repeat the step until the ring is complete. Install the security chain at all joints as shown in Fig. a. Adjust the ring while all clamps are on but still loose until the roof is straight or slightly convex, then tighten all clamps.

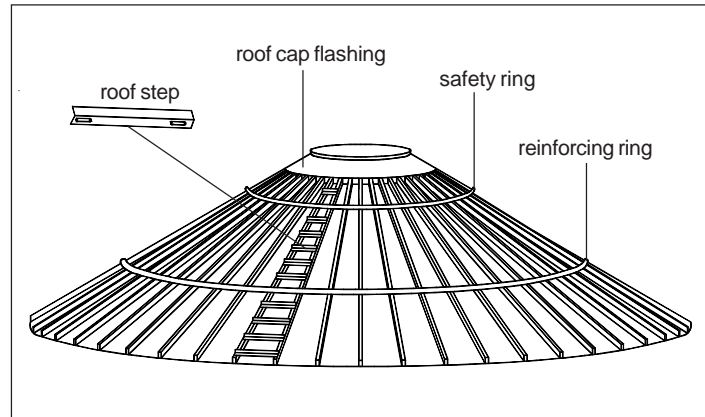


a PIPE EXPANDER WITH BUSHING

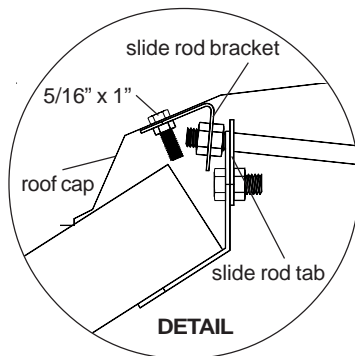
27

attach the roof steps

The roof steps should be installed as the sheets are being added when the desired location is reached (fig. b). See the roof step table on page 43. Normally, the manway roof sheet would be to the right of the roof steps (fig. g page 39). However, the manhole cover, hinges, and latches can be assembled to open either right or left, allowing the manhole to be on the left of the steps if desired. A manway I.D. drawing is located on page 44.



b PLACING THE ROOF STEPS



c BASIC ROOF CAP ASSEMBLY, SIDE VIEW

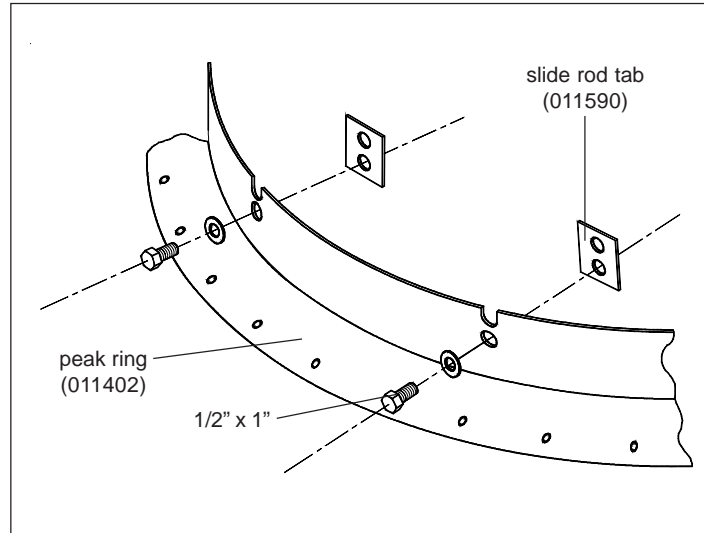
Roof Steps

Part No.	Overall Length
012738	8 5/8"
011486	15"
011488	18 1/8"
011490	21 1/8"
011492	24 3/8"
011496	30 1/2"
011498	33 3/4"
011500	36 7/8"
011502	39 7/8"

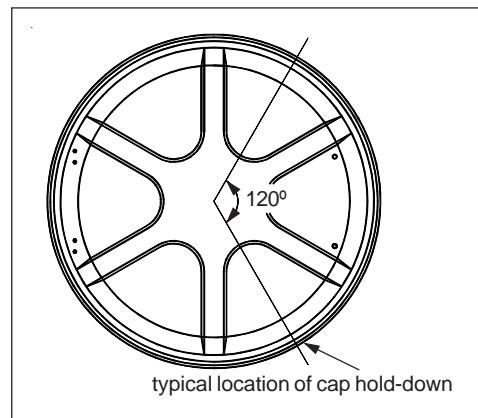
28

put the roof cap assembly together

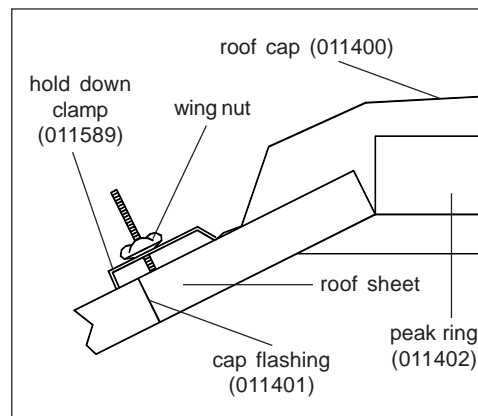
Bolt the roof cap slide rod brackets to the roof cap with 5/16" x 1" bin bolts and flange nuts (fig. c, page 42). Fasten the slide rod tabs to the peak ring with 1/2" bolts (fig. d). Insert the slide rods through the upper holes in the tabs and thread a nut onto the rod (fig. c detail, page 42). Place the rod through the slide rod bracket and nut on that side also. Double nut the other end of the slide rod at the roof cap. Locate the roof cap hold-downs as shown (fig.s e and f).



d FASTEN THE SLIDE ROD TABS



e ROOF CAP HOLD-DOWN LOCATIONS



f INSTALL THE ROOF CAP HOLD DOWNS

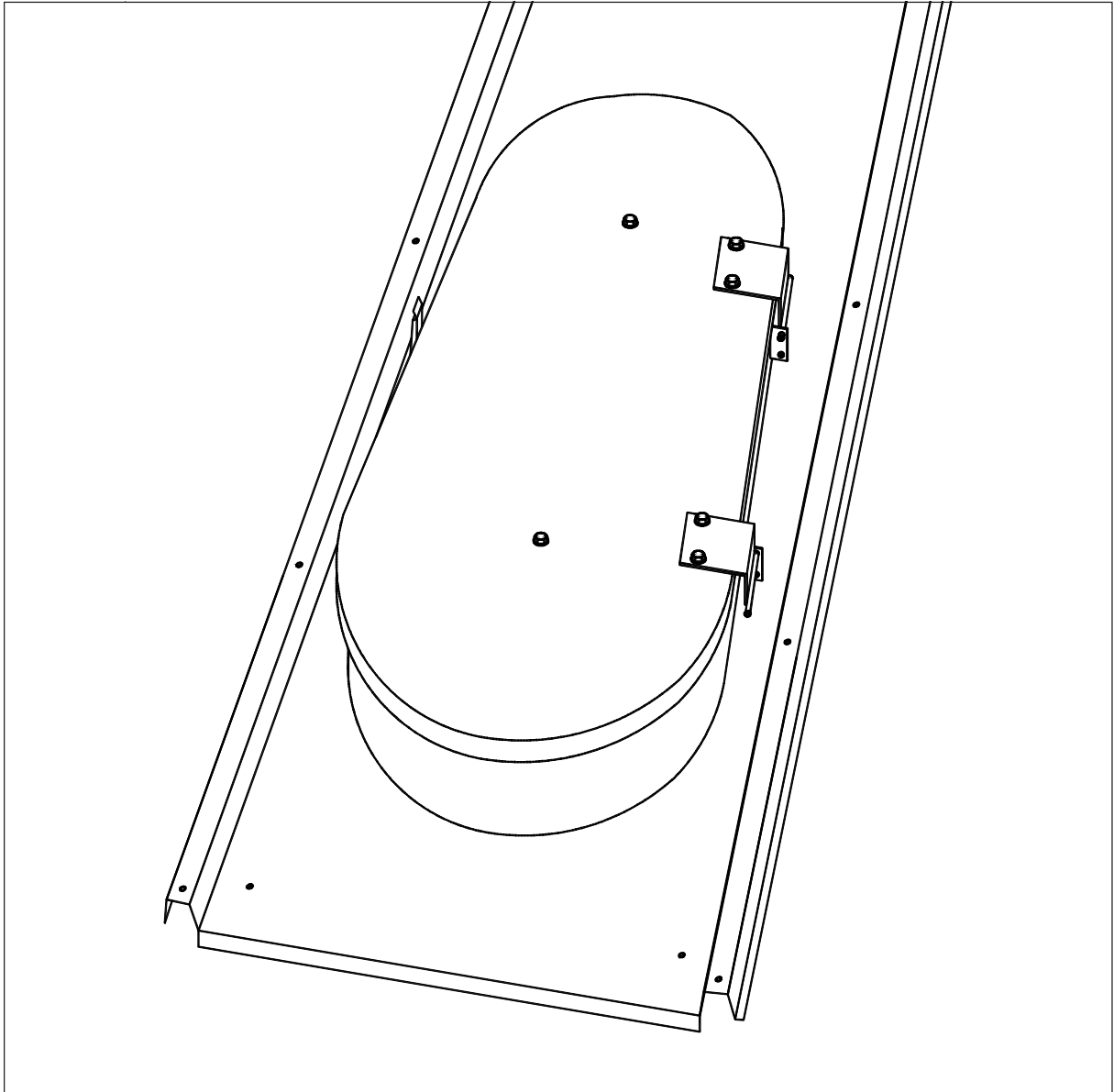


29

the manway cover

The manway which comes with this bin will be pre-assembled at the factory as shown below (fig. a).

44



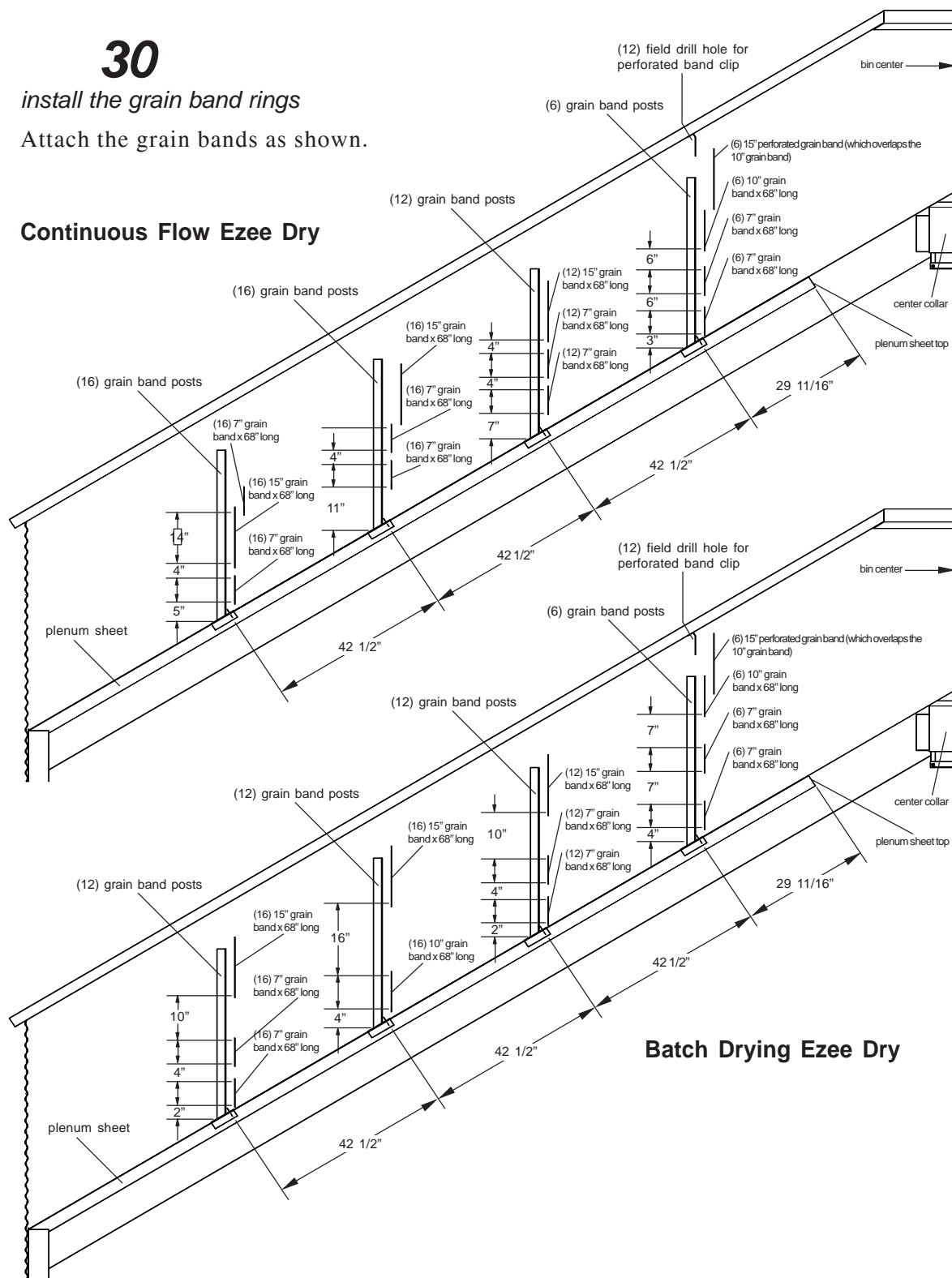
a MANWAY COVER WITH PROTRUDED COLAR (27', 30', 33', AND 36')

30

install the grain band rings

Attach the grain bands as shown.

Continuous Flow Ezee Dry



45

b CONTINUOUS FLOW AND BATCH DRYING GRAIN BAND AND GRAIN BAND POST LAYOUT



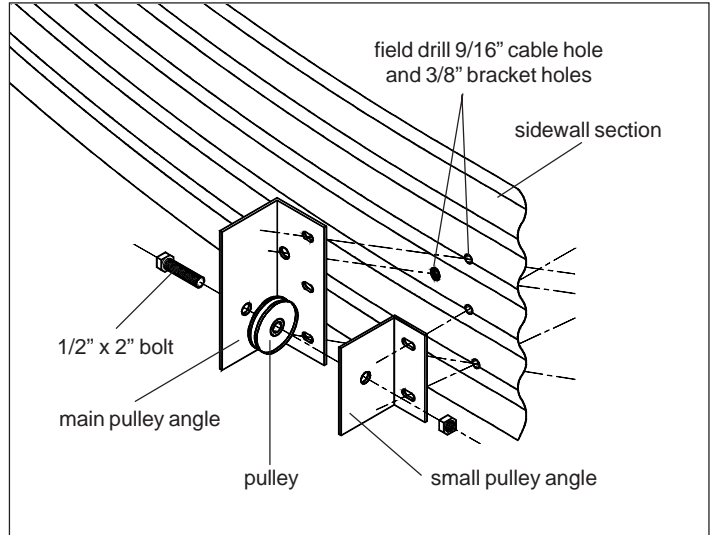
Install Chain Assemblies

46

31

mount outside pulley brackets

At the place where the winch (batch dryer) or hydraulic unit (continuous flow dryer) is to be located mount the outside pulley brackets to the sidewall (fig. a). The pulley should be positioned so the cable will run beneath a purlin. Drill a hole in the sidewall where the 1/4" cable will pass through as shown.

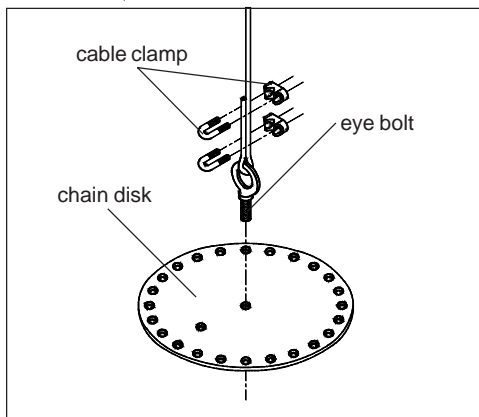


a MOUNT THE OUTSIDE PULLEY BRACKETS

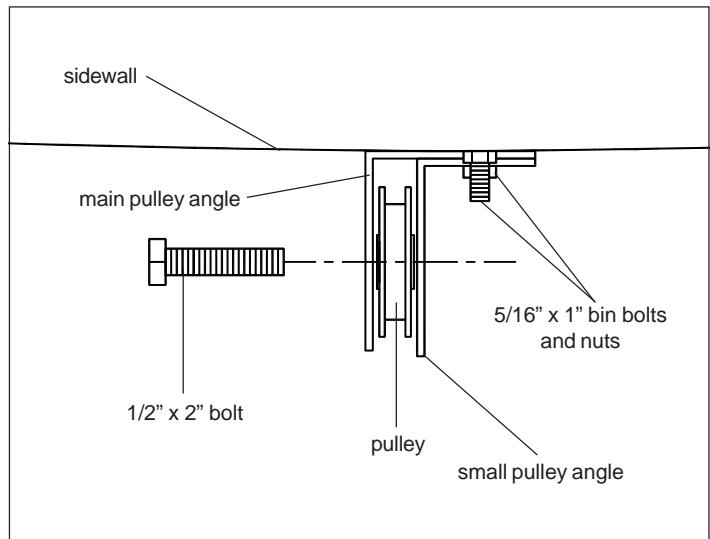
32

attach the chain disk

Connect the 3/8" x 1 1/4" eye bolt to the center of the chain disk (fig. b). Pass the 1/4" cable through the eye bolt and secure it with two cable clamps. Thread the free cable end through the center pulley. This end will attach to the winch or hydraulic cylinder (see step 50).



c ATTACH THE CHAIN DISK



b OUTSIDE PULLEY BRACKETS ASSEMBLY, TOP VIEW

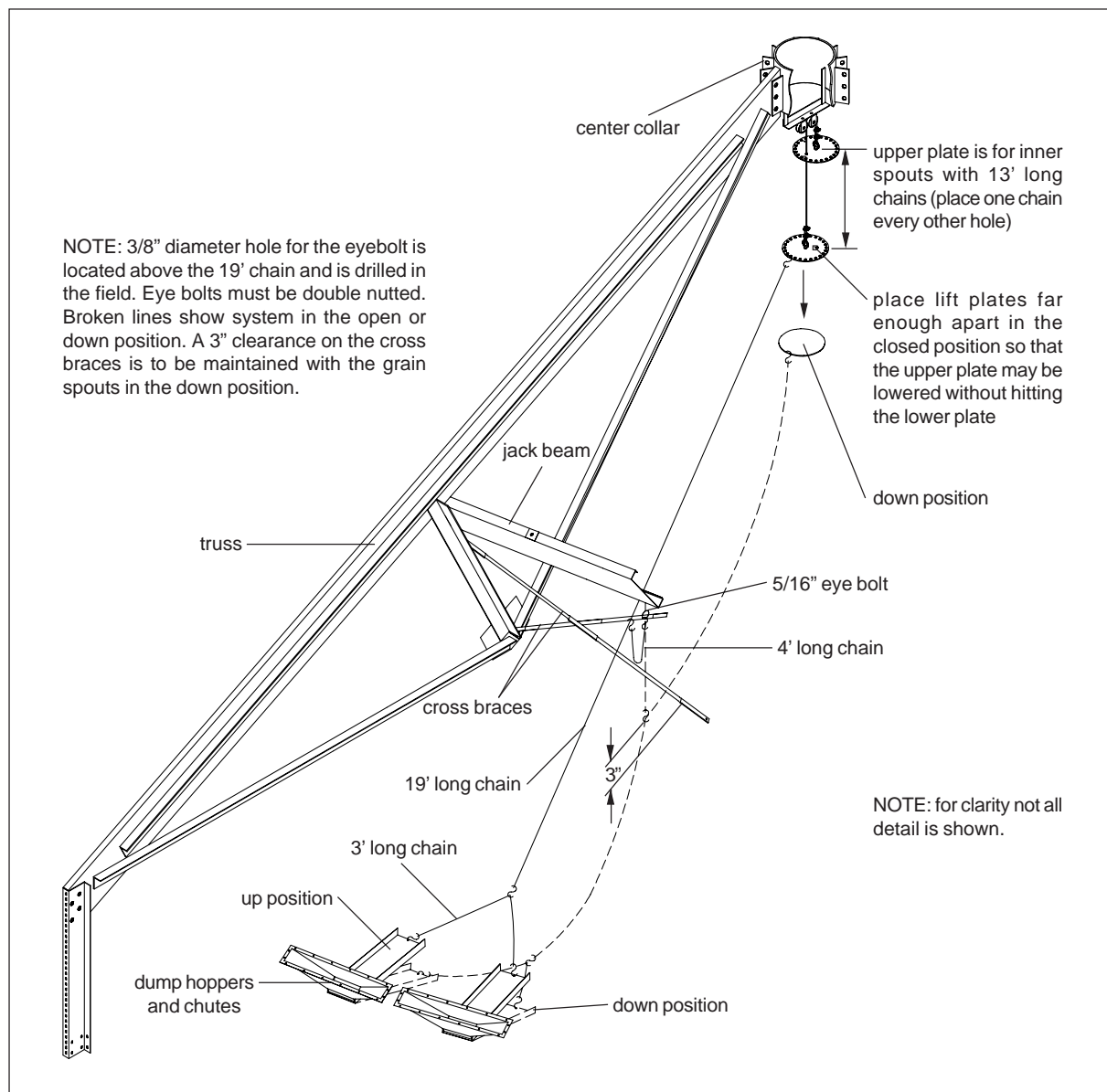
33

install the chain assemblies

Fix the center chain disk at an elevation of 3" beneath the pulley bracket (fig. d). Install "S" hooks in each edge hole of the disk. Take the twin loop chain and cut it into equal lengths based on the chain length chart. Install two lengths of chain 180° apart, from the "S" hooks

in the center disk to the outer dump chutes. Adjust the chains until the dump chutes are level (fig. d). Continue around the bin installing chain pairs to the upper dump chute. Use the same "S" hook in the center chain disk as was used for the lower dump chute.

47



d INSTALL THE LIFTING CHAIN ASSEMBLY



Continue Building the Sidewall

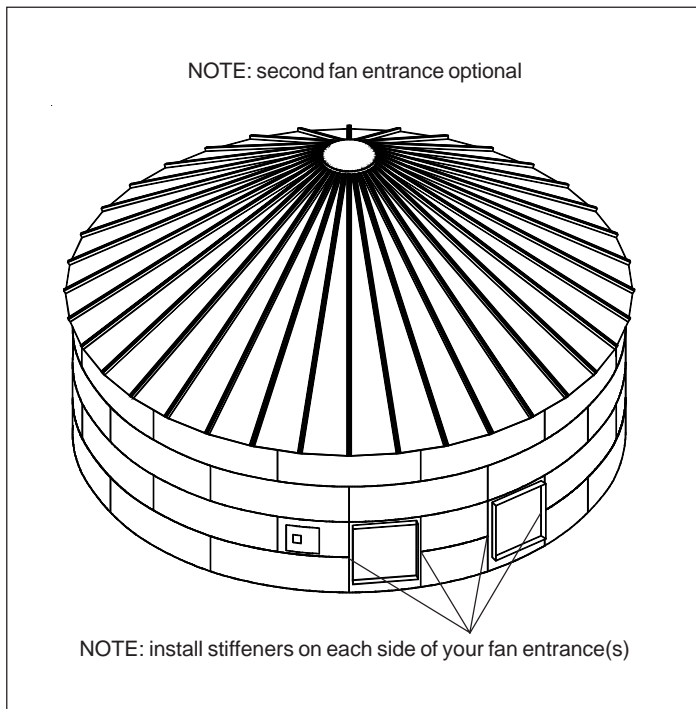
34

build the 4th sidewall ring

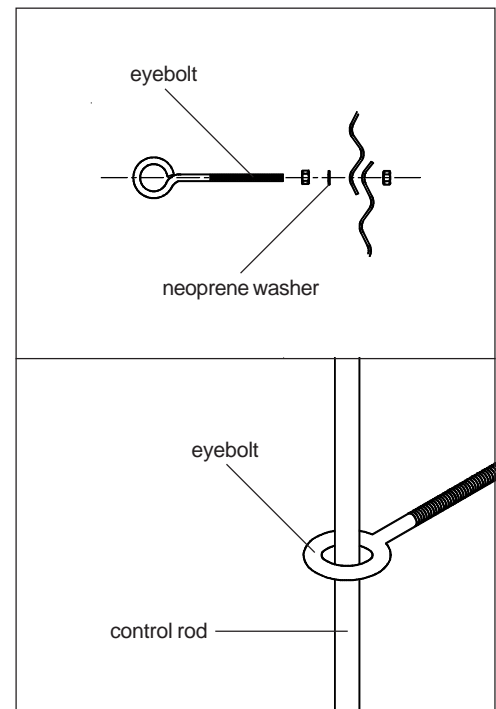
Raise the bin and add the 4th full sidewall ring. The outside ladder needs to be assembled as the bin is being raised. Refer

to pages 60-63 for ladder instructions. At this time bolt the fan entrance frame(s) into the opening(s). **The wide portion of the frame should go toward the bottom.** Then, install stiffeners on both sides of the fan entrance frame(s).

48



a ADD THE SAFETY RING AND ROOF CAP FLASHING



b INSTALL GUIDING EYE BOLTS

Eye Bolt Location Table (for Vac-U-Vents)

bin height	eye bolt placement from top of bin	no. of eye bolts	length of pipe
7 R 18'-8"	bottom of 1st & 3rd full ring	2	3 @ 63"
8 R 21'-4"	bottom of 1st, 3rd & 5th full ring	3	3@ 63" / 1 @ 31"
9 R 24'-0"	bottom of 1st, 3rd & 5th full ring	3	4 @ 63"
10 R 26'-8"	bottom of 1st, 3rd, 5th, & 7th full ring	4	4 @ 63" / 1 @ 31"
11 R 29'-4"	bottom of 1st, 3rd, 5th, 7th, & 9th full ring	5	5 @ 63"

35

install the 5th ring and add stiffeners

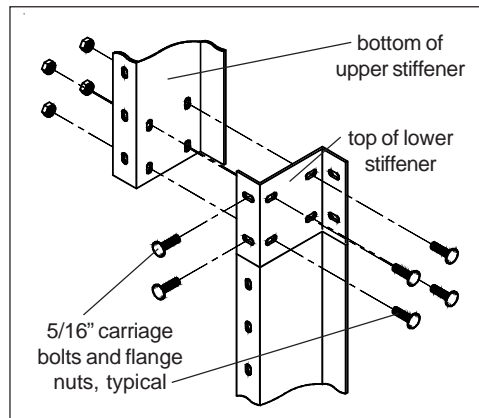
Raise the tank and add the fifth ring of sidewall sheets. Install the first set of intermediate stiffeners beneath the set of top stiffeners previously installed as shown (fig. c and d). Use 5/16" x 1" carriage bolts where the stiffeners splice together. Continue adding long intermediate stiffeners as you add more sidewall rings until the final ring(s) of the bin are reached. Use the same method of joining stiffeners and follow the same bolt pattern throughout.

36

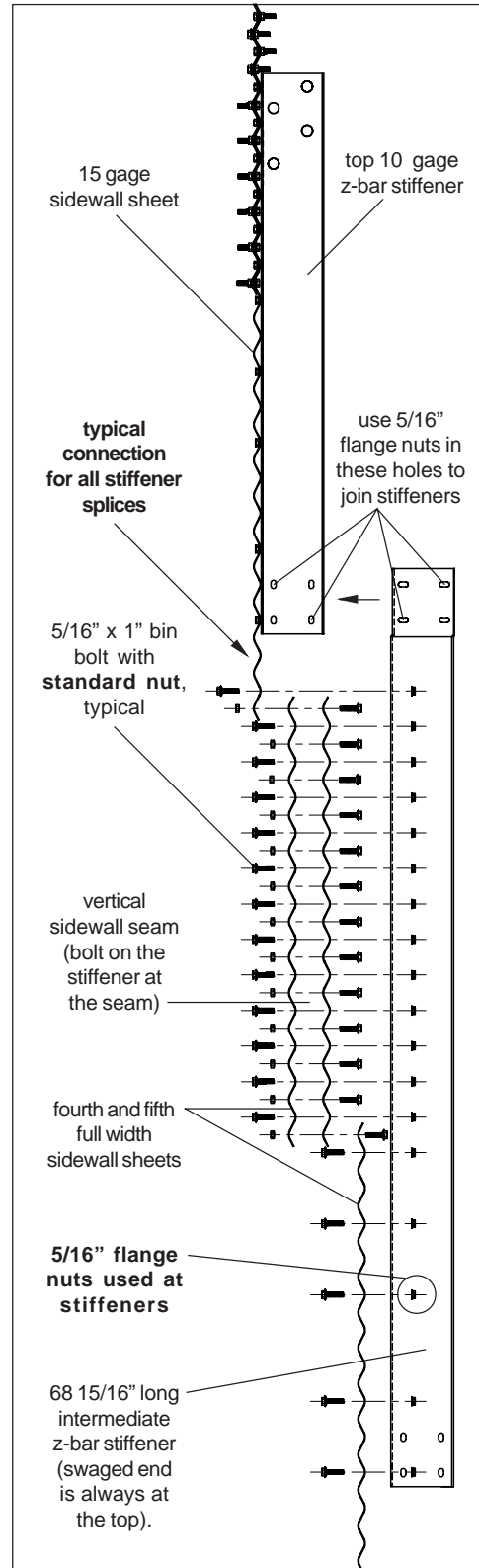
add control pipes and eyebolts

If your bin is equipped with Vac-U-Vents insert the upper control pipe section into the coupling bolted to the angle on the lower Vac-U-Vent sheet. Install eye bolts at the bottom of the first and third full sidewall rings (fig. b, page 48). These eye bolts act as guides for the control pipes. As the bin is being built add control pipes as shown in the chart on page 48.

NOTE: 5/16" x 1" bolts are used at all holes through stiffeners except as noted.



c TYPICAL STIFFENER CONNECTION



d ADD THE INTERMEDIATE STIFFENERS

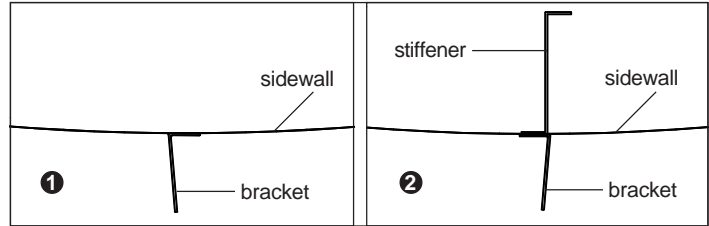


Platforms

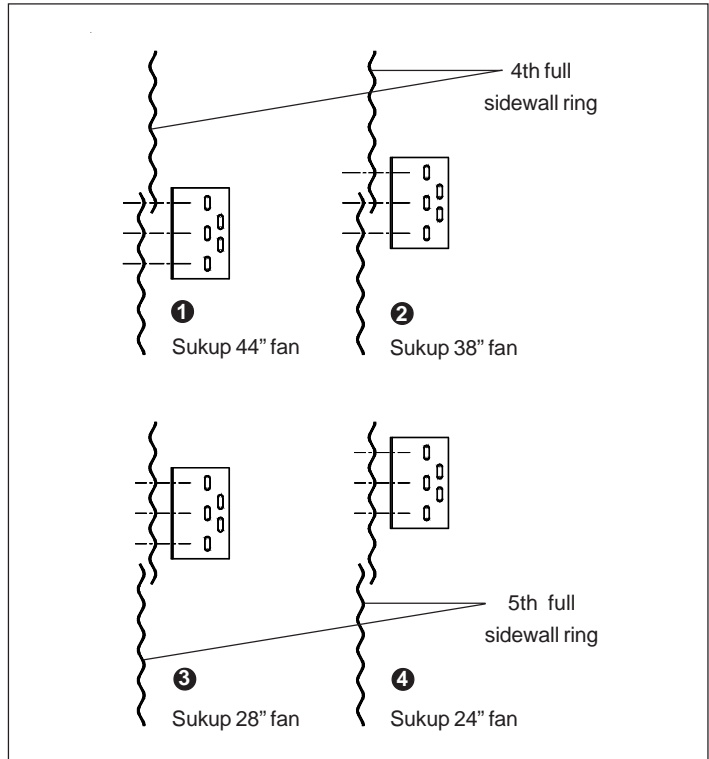
37

add the upper platform brackets

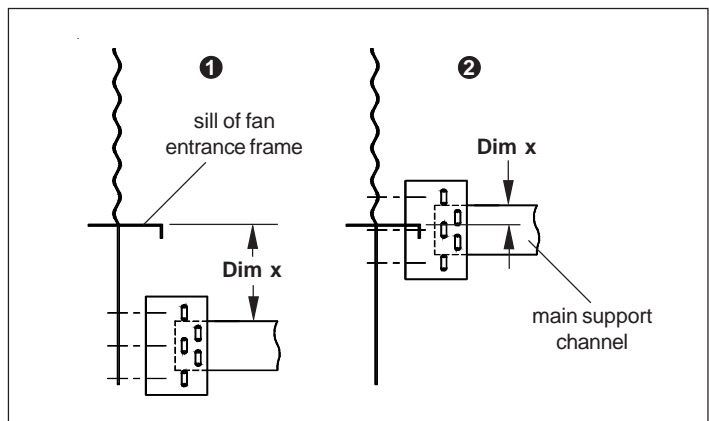
See the system layout drawing on page 21 for the platform location. On each side of the fan entrance frame bolt upper fan platform brackets (fig. a). Bolt one to the sidewall only and the other to sidewall at the opposite side of a stiffener. The vertical location should correspond to the size of fan used (fig. b). If your unit has two fans, assemble both at the same time.



a ADD THE UPPER PLATFORM BRACKETS



b VERTICAL LOCATION OF THE UPPER FAN BRACKET



c ATTACH THE LOWER PLATFORM BRACKETS

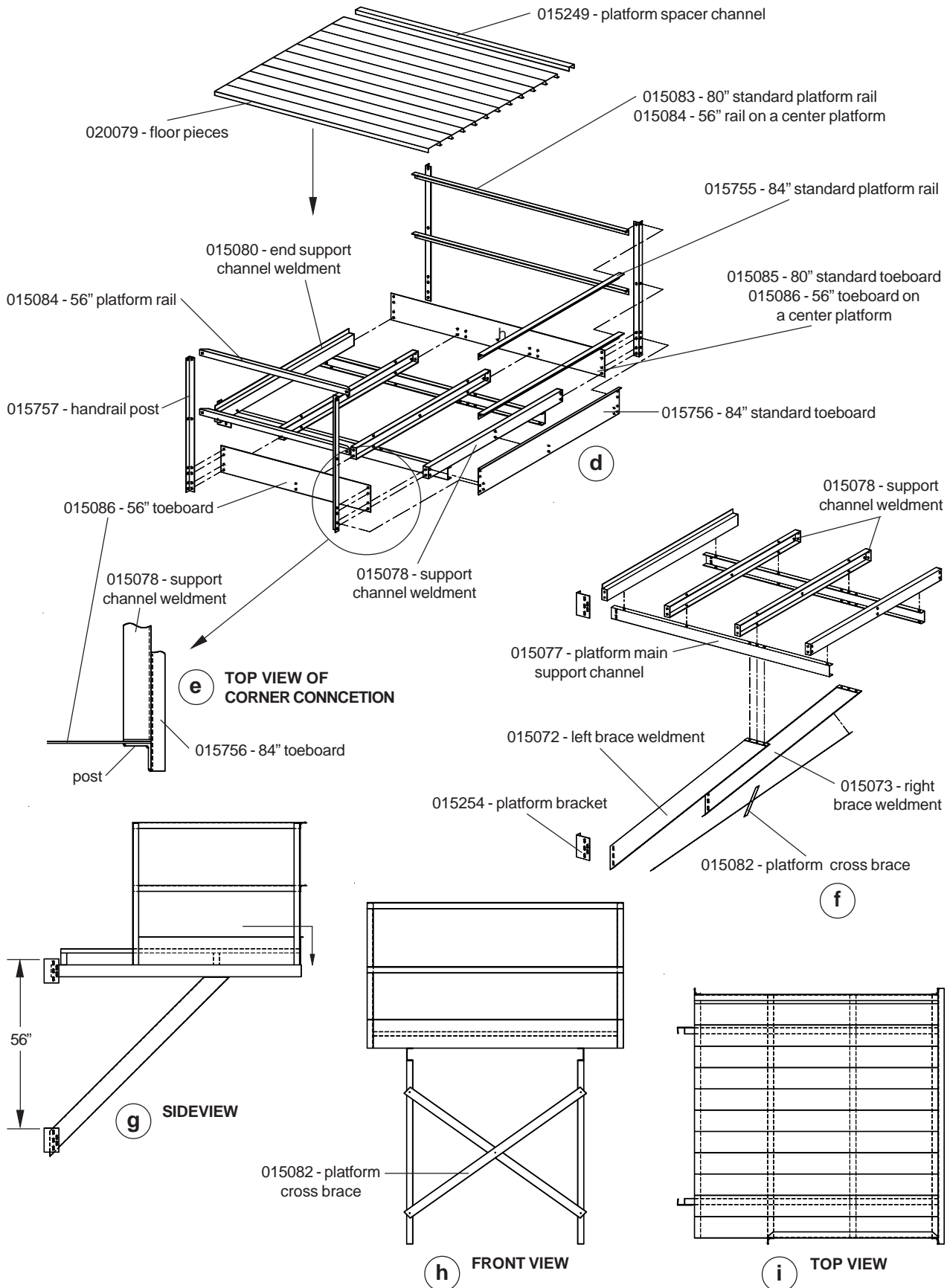
38

assemble the fan platform

Assemble the door and step across platform (if required) as shown on page 52. Raise the bin and install the next two sidewall rings and next set of stiffeners. Attach the lower fan platform bracket 56" below the upper (fig. g, page 51). Fasten the main support channels, the knee braces and the cross braces as shown in figures f and h, page 51. All connections use 3/8" x 1" bolts. The main support channel should be at a height based on the chart below. If a different model or brand of fan is used, measure from its support leg to the center of the outlet and adjust the dimensions accordingly. Assemble the rest of the platform as shown in figures d - i on the following page. The fan and heater unit may be set on the platform and bolted to the entrance adapter at this time.

Platform Brackets Dim. x

Sukup Fan	Outlet Height	dim x	figure
24"	16 1/2"	2 1/4"	c, 2
28"	18 1/4"	1/2"	c, 2
38"	23 5/8"	4 7/8"	c, 1
44"	28 3/4"	10"	c, 1



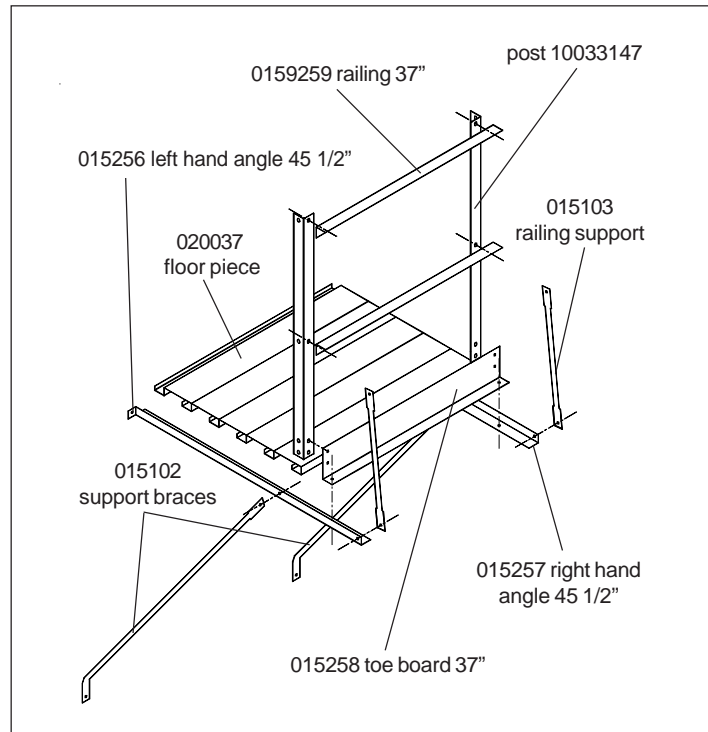


52

39

build the door platform

The door platform will be positioned between the ladder and the fan platform. Locate the support angles and braces such that the floor level will approximate that of the fan platform. Some drilling of the sidewall sheets may be required. Use 5/16" x 1" bin bolts and nuts for all the door platform construction (fig. a).

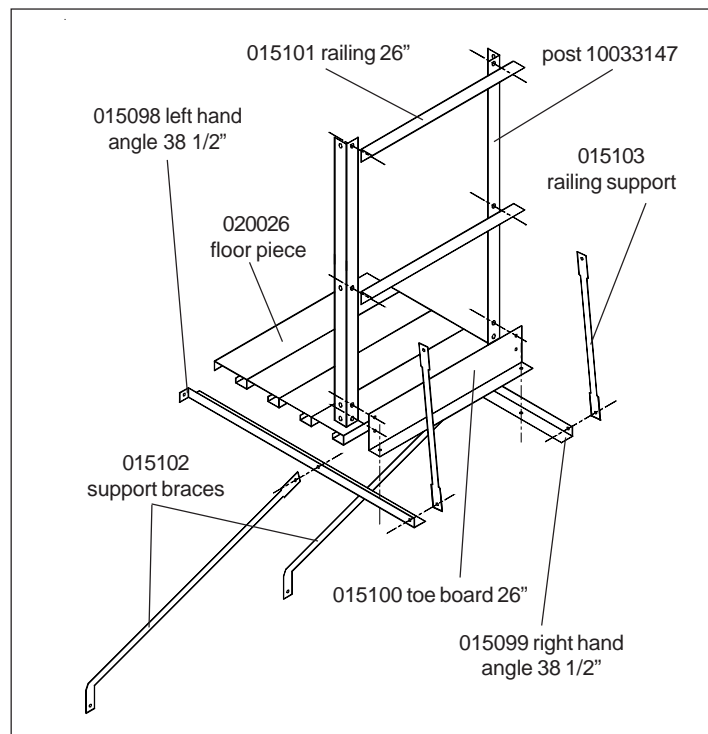


a DOOR PLATFORM ASSEMBLY

40 (2 fan units only)

build the step across platform

The step across platform will be positioned between the two fan platforms. Locate the support angles and braces such that the floor level will approximate that of the fan platforms. Some drilling of the sidewall sheets may be required. Use 5/16" x 1" bin bolts and nuts for the entire step across platform construction (fig b).



b STEP ACCROSS PLATFORM ASSEMBLY

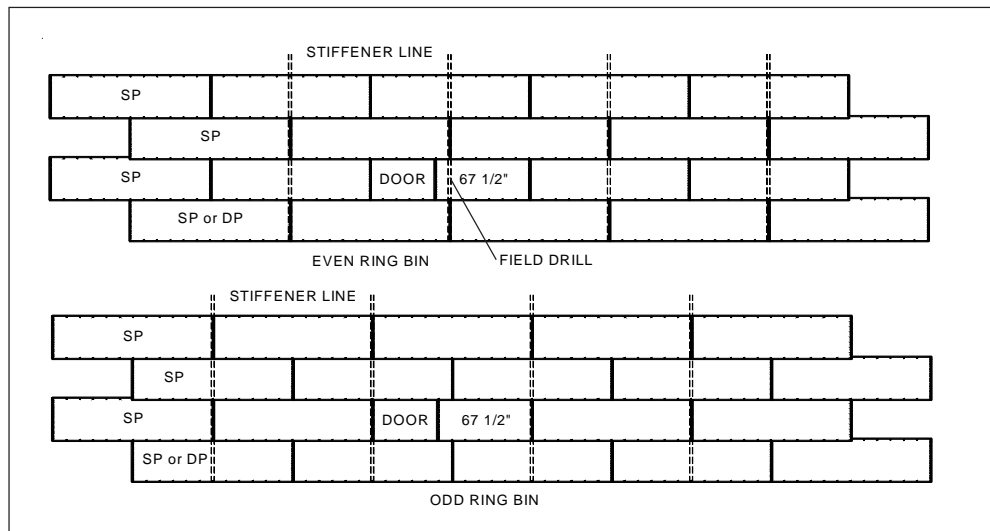
41

continue to raise the sidewall

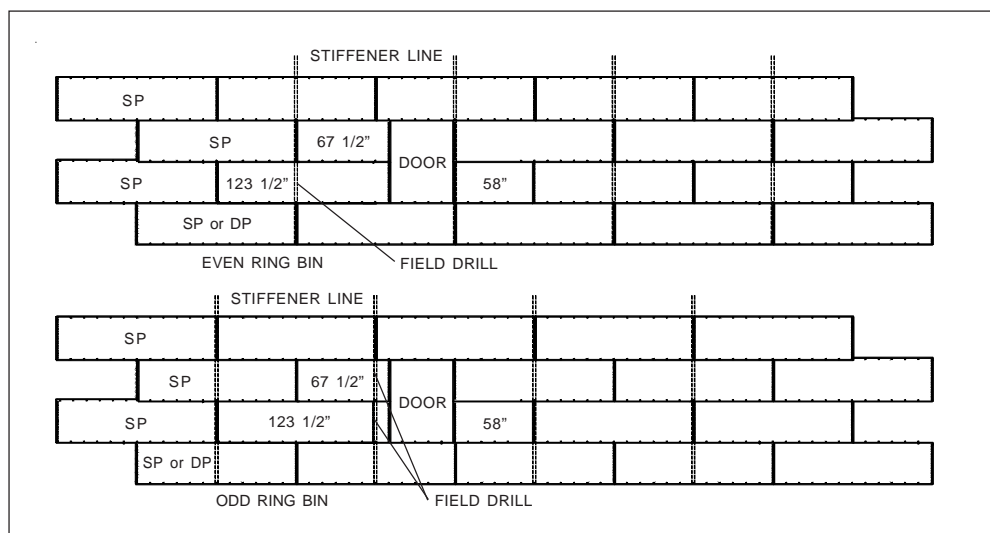
Continue to raise the bin and add sidewall sheets as required. Use the proper gage of sidewall sheets as given in the table on page 59. **(Look ahead to step 42.)** For every two sidewall rings that are added a set of stiffeners

will need to be installed. On odd ring bins a short intermediate stiffener is supplied to be used as the second stiffener from the bottom. At the same time, continue adding the ladder and Vac-U-Vent control pipes if included on your specific bin.

53



C ONE RING DOOR IN A SINGLE PUNCHED RING



d TWO RING DOOR IN SINGLE PUNCHED RINGS

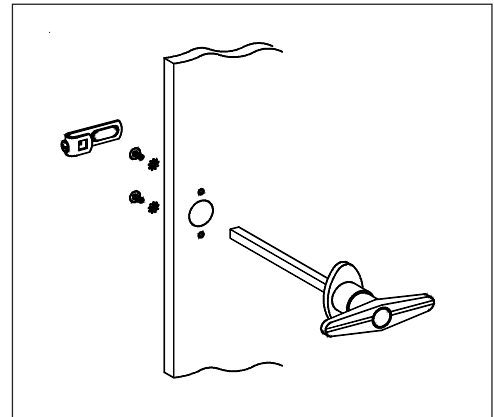


Doors

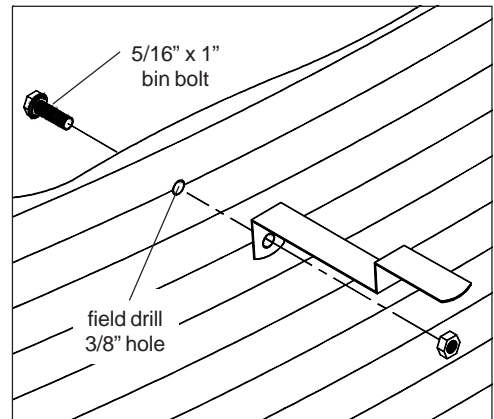
42

locate the access door

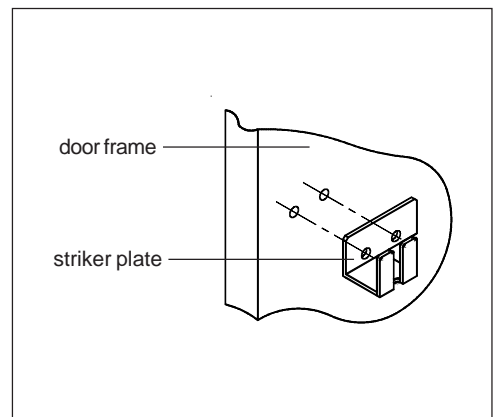
One ring access doors (32" doors) are to be located in the second ring from the bottom. Two ring access doors (64" doors) are to be located in the second and third rings from the bottom. Special sheets are provided to accommodate the door frames (fig. c & d on page 53. These sheets will need to be field drilled for the stiffeners.



a INSTALL THE LOCK ASSEMBLY



b BOLT ON THE OUTER DOOR CLIP



c FASTEN THE STRIKER PLATE

43

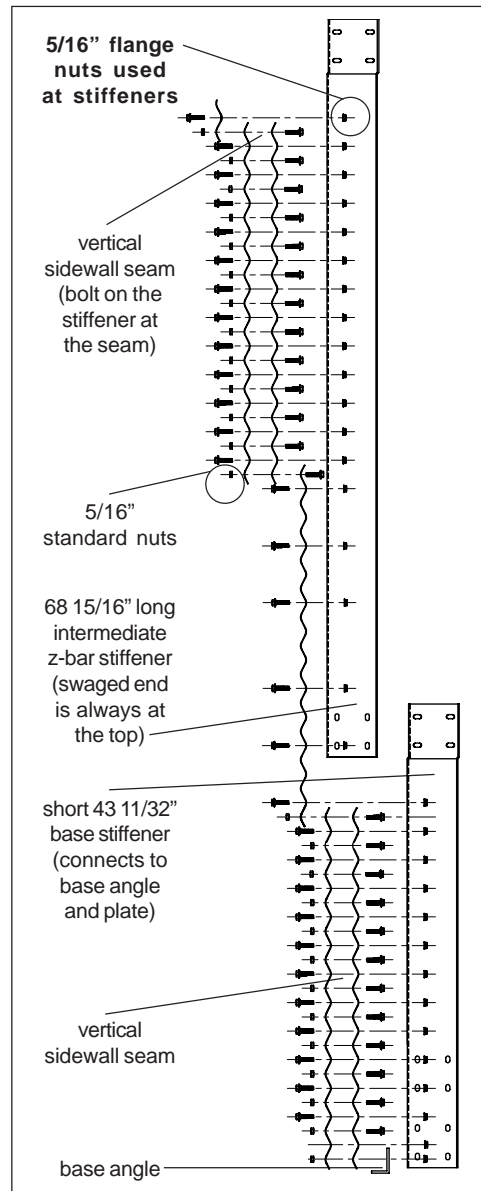
install the access door

Insert the correct door frame (32" or 64") into the opening created by the special length sheets. Use sealer tape on all four sides of the opening. Attach the cover to the frame at the hinges and install the lock assembly (fig. a). Bolt the outer door clip to the sidewall on the hinge side to keep the door cover fixed in position when open (fig. b). Fasten the striker plate to the door jamb (fig. c). Adjust the cam so that the door will close tightly. Use this same method to install the lock in the upper access door.

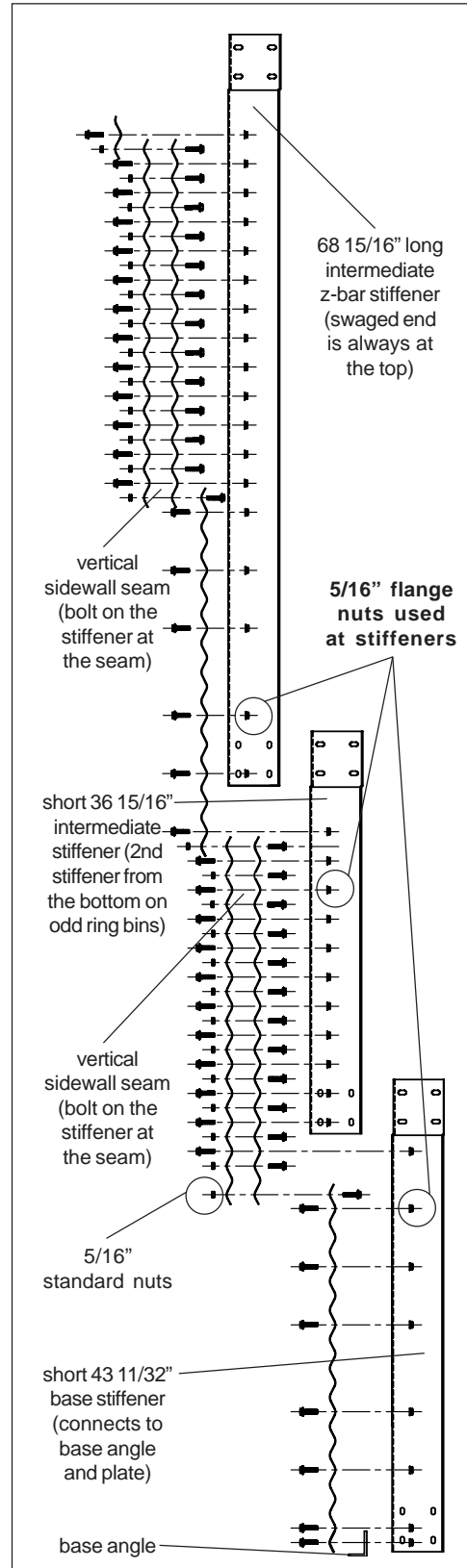
44

install the final stiffener(s)

When nearing the completion of the sidewall a unique set of stiffeners is provided for use at the bottom of the sidewall. Install these bottom stiffeners as shown (fig.s d and e). For even ringed bins follow figure d. For odd ringed bins follow figure e.



d EVEN RING BIN BASE STIFFENERS



e ODD RING BIN BASE STIFFENERS

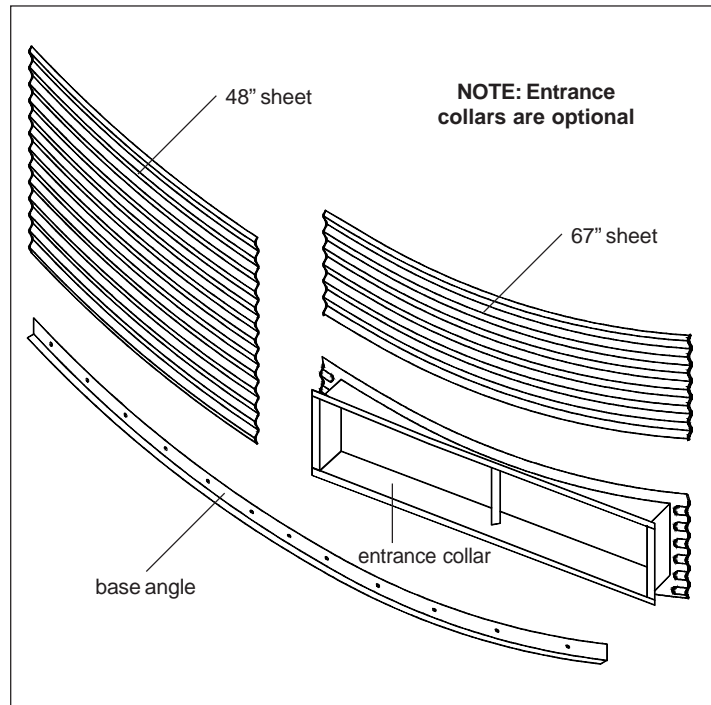


Bin Completion

45

bolt on the bottom sidewall ring

Install the bottom ring of sidewall sheets, making sure the floor flashing holes are at the proper height to match the floor supports. Entrance collar sheets are available as an option for the aeration fan. Bolt these three sheets together along with a section of base angle (fig. a). Install the transition on to the entrance collar and bolt this assembly to the bottom sidewall ring.

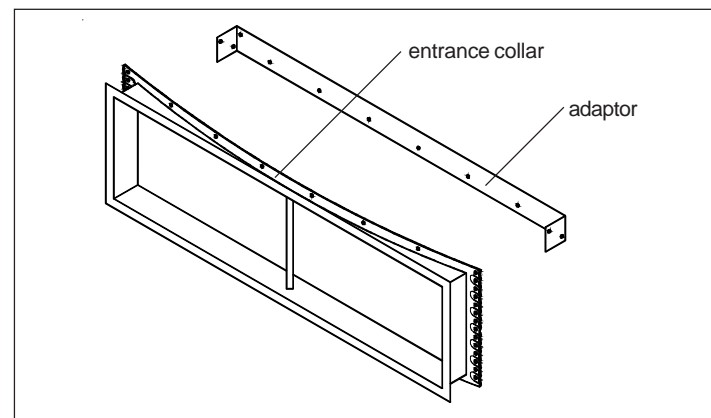


a BOLT TOGETHER THE ENTRANCE COLLAR ASSEMBLY

46

attach the entrance collar adaptor

If 13 inch floor supports are used field drill the holes in the entrance collar for the adaptor. The adaptor should fit flush on the inside and at the top. Adaptor holes will be toward the bottom (fig. b).

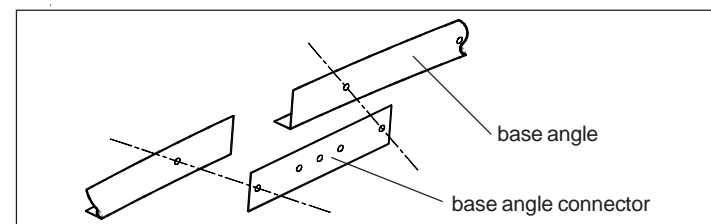


b ATTACH THE ENTRANCE COLLAR ADAPTOR

47

complete entire base angle installation

Finish installing the base angle all the way around the bottom ring using the base angle connectors (fig. c). All the hardware for the base should be packaged separately.

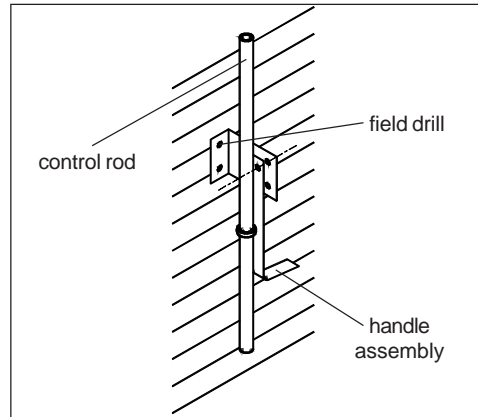


c INSTALL THE BASE ANGLE CONNECTORS

48 (Vac-U-Vents only)

attach the control rods

Locate the handle assembly about 48" from the ground (fig. d). Drill (2) 3/8" diameter holes in the sidewall to match the bracket. Slide the control rod through the set collar on the handle then bolt the handle bracket to the sidewall. With the Vac-U-Vent fully closed and the handle in the down position, tighten the bolt in the set collar.

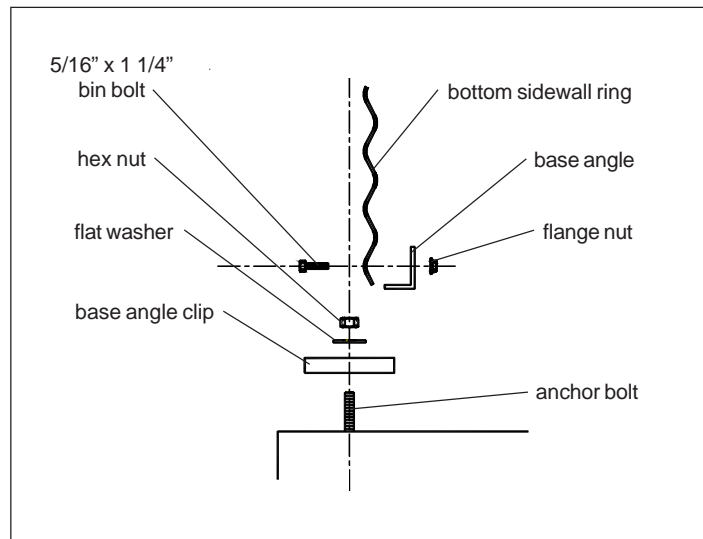


d ATTACH THE CONTROL ROD

49

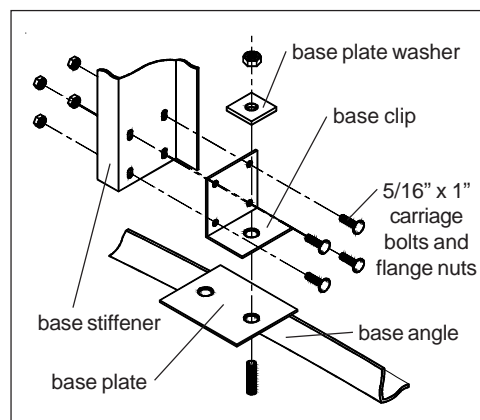
secure the bin to the foundation

While the bin is still suspended apply the base sealer to the bottom of the base angle. Attach stiffener base clips to the bottom of the stiffeners (fig. f). Put base plates on the inside anchor bolts. Lower the bin to the foundation connecting the stiffener base clips to the inside anchor bolts. Be sure that any anchor bolts below the transition are cut off prior to lowering the bin. Place base angle clips onto the outer anchor bolts and tighten all anchor bolt nuts to finish securing the bin to the foundation (fig.s e and g).

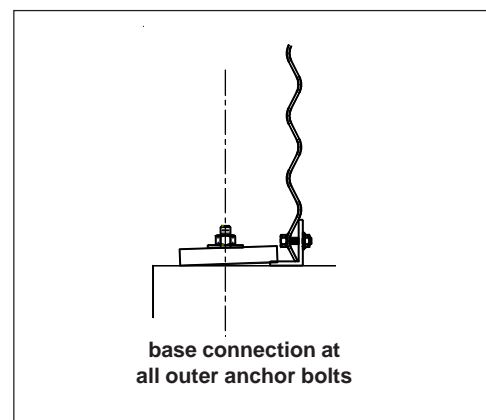


e BASE CONNECTION AT OUTER ANCHOR BOLTS

NOTE: Shim under base plates as required (shims not supplied by MFS/York/Stormor)



f INSIDE STIFFENER / BASE CONNECTION



g TIGHTENED OUTER BASE CONNECTION

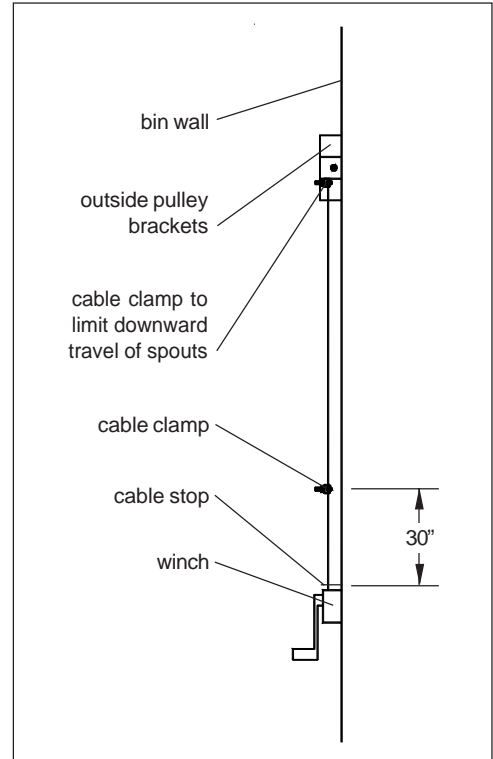


50 (batch units only)

fasten the winch and winch bracket

Install the winch bracket and winch roughly 48" above the concrete as shown in figures a and b. Trim the cable as needed and attach it to the winch. The travel of the cable must be limited to prevent damage to the dump hoppers. After insuring that all dump chutes are level, attach a cable clamp to the cable as close to the winch drum as possible. This clamp acts as a visual indicator of when to stop raising the dump chutes. Release the cable from the winch until this clamp is approximately 30" above the winch drum and attach a second cable clamp to the cable beneath the outer pulley bracket near the top of the bin sidewall. This clamp prevents over-opening of the dump chutes. Make sure that the chains are tight so that the chutes don't interfere with the hopper neck when in the lowered position.

NOTE: Look back at the pulley brackets illustration and step 31 on page 46.

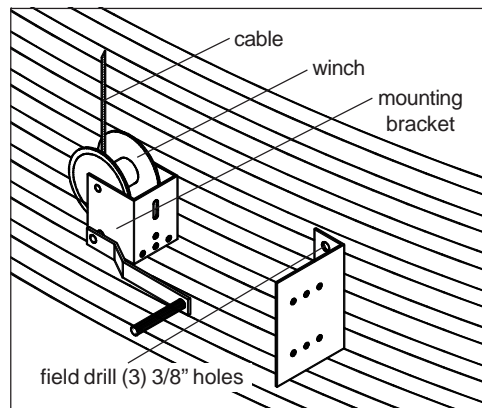


58

51 (continuous flow / automatic batch units)

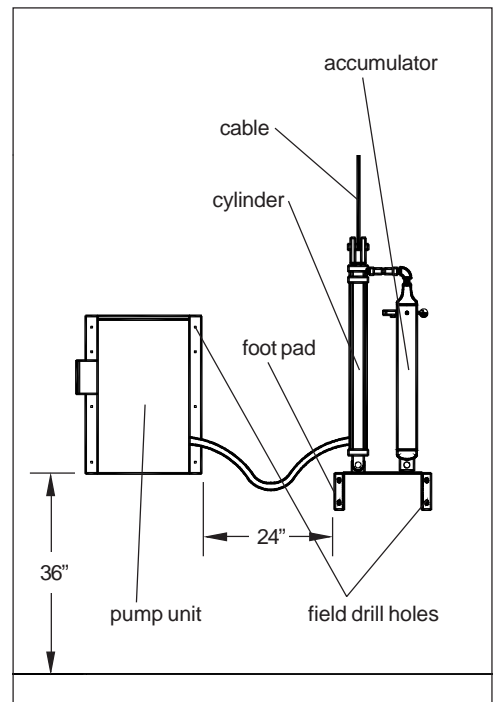
install hydraulic pump unit

Install the hydraulic pump unit along with the cylinder / accumulator assembly as shown in figure c. Trim the cable and attach it to the cylinder using two cable clamps. Connect the hose between the pump unit and the cylinder. Field drill all holes.



b WINCH ASSEMBLY DETAIL DRAWING

a INSTALL THE WINCH



c ADD THE HYDRAULIC PUMP UNIT

Sidewall Gage Layout

36' Ezee Dry Sidewall Gages

Ring No.	Color Code	11 Rings	10 Rings	9 Rings	8 Rings	7 Rings
		29' 4" to eave	26' 8" to eave	24' 0" to eave	21' 4" to eave	18' 8" to eave
1	Red	17	17	17	17	17
2	Brown	10	10	10	10	10
3	Blue/Yellow	15s	15s	15s	15s	15s
4	Red	17	17	17	17	17
5	Blue/Yellow	15s	15s	15s	15s	15s
6	See Right	15 (Blue/Yellow)	15 (Blue/Yellow)	15 (Blue/Yellow)	14 (Yellow)	14 (Yellow)
7	See Right	14s (Yellow)	14s (Yellow)	14s (Yellow)	14s (Yellow)	12s (Black)
8	Black	12	12	12	12	
9	Black	12s	12s	12s		
10	See Right	12 (Black)	11 (Orange)			
11	Orange	11s				

NOTE: The suffix 's' indicates stiffener punching

59

Finishing Construction

52

add the lower aeration fan and floor

Install the lower aeration fan and transition. Install the floor and floor supports per the instructions provided with the floor.

53

add the dryer control/wire & plumb fans

Install the dryer control per the instructions provided with the control unit. Wire and plumb the fans and other electrical and heat devices according to the instructions provided by the manufacturer. MFS/YORK/STORMOR strongly suggests that all wiring and gas plumbing be performed by a qualified electrician familiar with this type of equipment.



Ladders

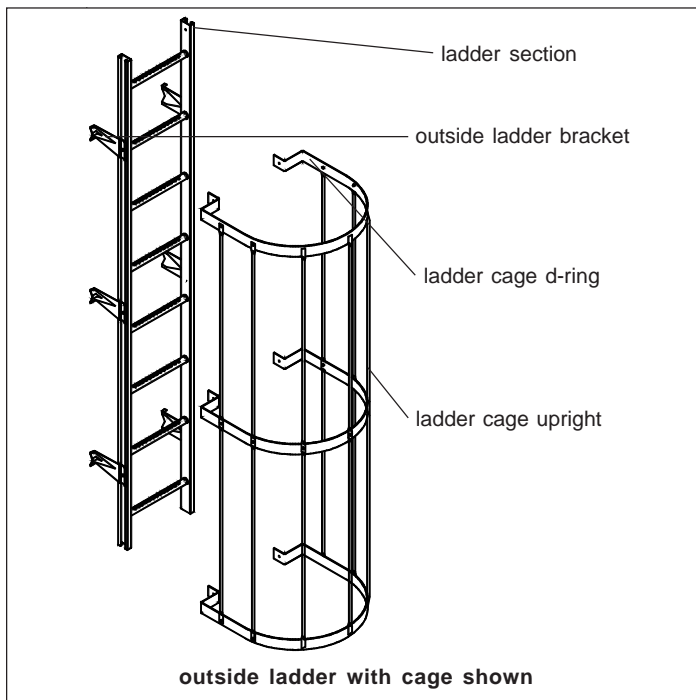
54

ladder installation

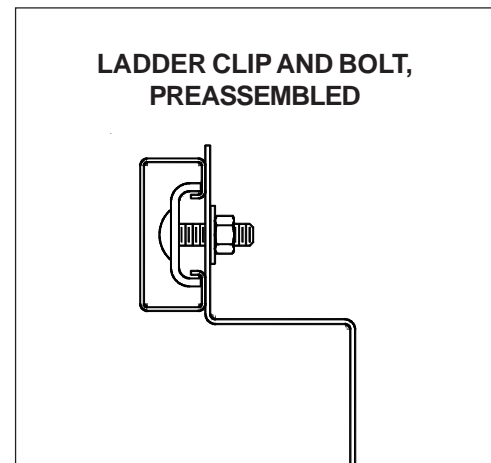
Preread the entire ladders section (pages 60 - 63) before installing the ladders. Refer to the ladders, safety cages and platforms manual for specific assembly instructions. Attach the ladder to the bin sidewall while building the bin from top to bottom (fig.s a - g). The first ladder bracket should be located about 8" below the eave (fig. e). Field drill this connection. Thereafter brackets are designed to be located at every horizontal seam. Be sure that all the brackets and splices are properly spaced and **securely tighten all bolts**. Use bin bolts and nuts for the assembly. Fasten the safety cage to the ladder using the clip and bolt assemblies provided.

NOTE: OSHA Regulation - Subpart D., Section 1910.27 (d) (iv) states in par: "Cages shall extend down the ladder to a point not less than seven (7') feet nor more than eight (8') feet above the base of the ladder."

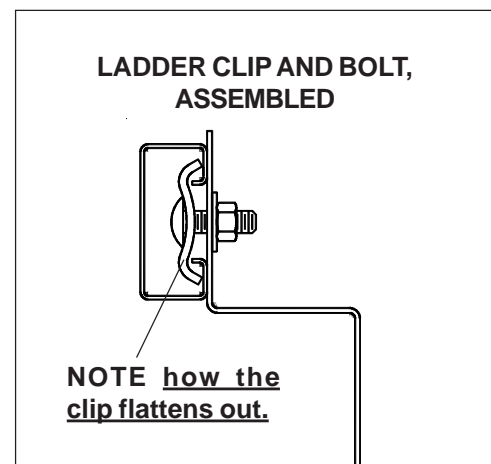
60



(b) OUTSIDE LADDER WITH CAGE ASSEMBLY

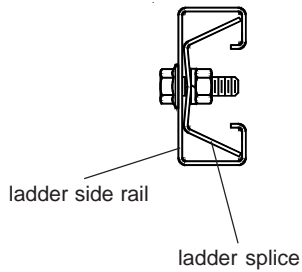


(a) TOP VIEW OF LADDER CLIP AND BOLT

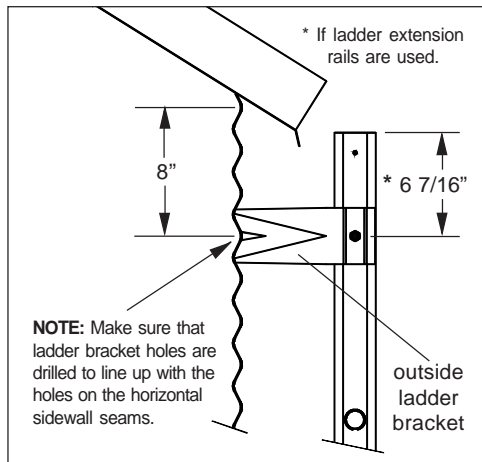


(c) TOP VIEW OF LADDER CLIP AND BOLT

TOP VIEW OF LADDER SPLICE

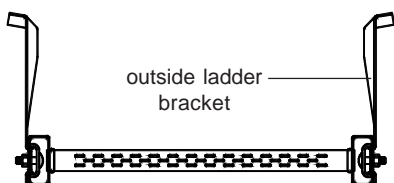


d TOP VIEW OF LADDER SPLICE

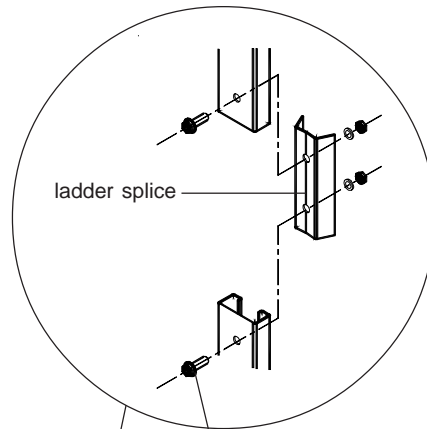


e LOCATE THE FIRST LADDER BRACKET

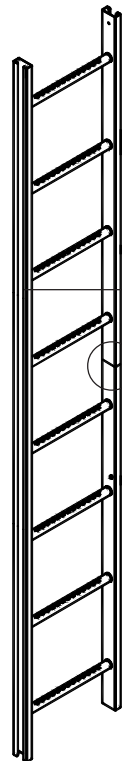
TOP VIEW OF OUTSIDE LADDER



f TOP VIEW OF THE OUTSIDE LADDER



5/16" bin bolt,
hex nut & washer



ladder section

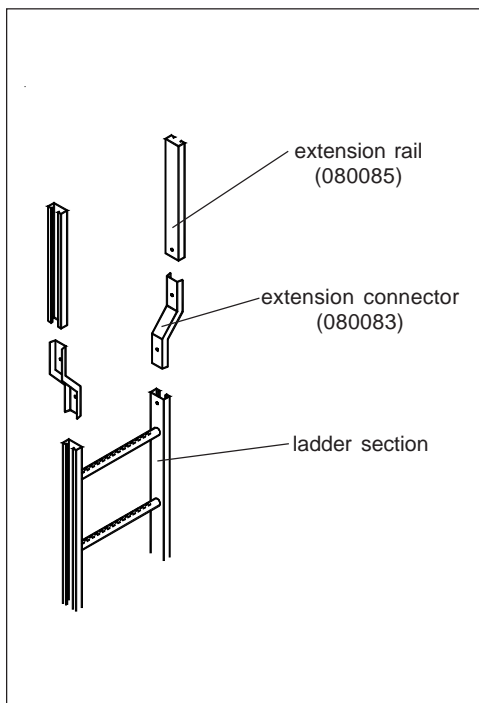
inside ladder

g INSIDE LADDER ASSEMBLY

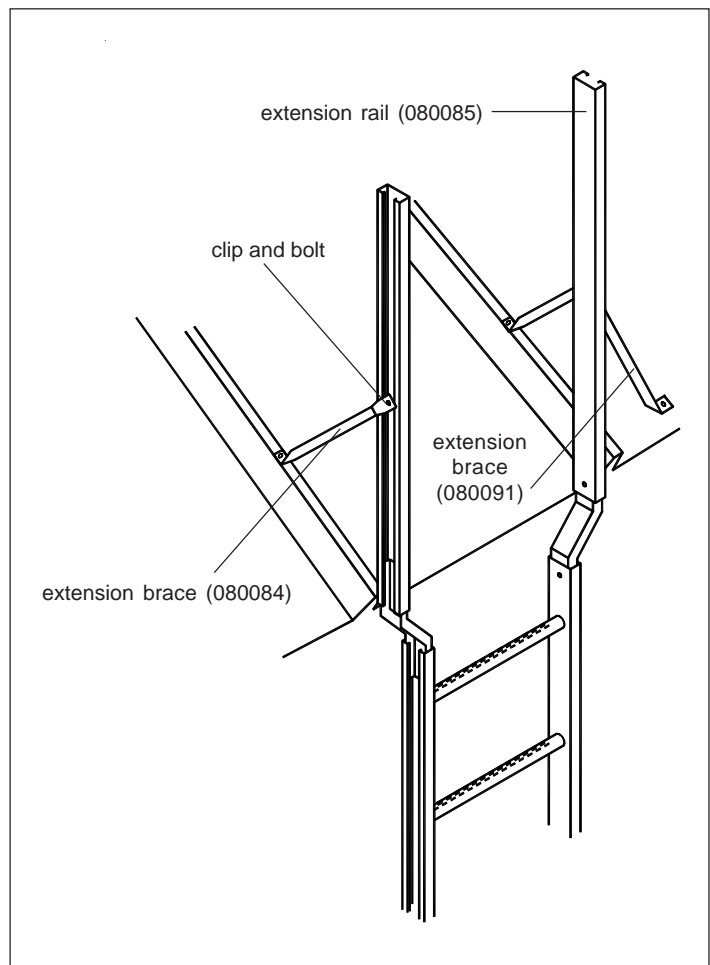
NOTE: Make sure that the tread on the rungs are facing toward the top of the ladder.



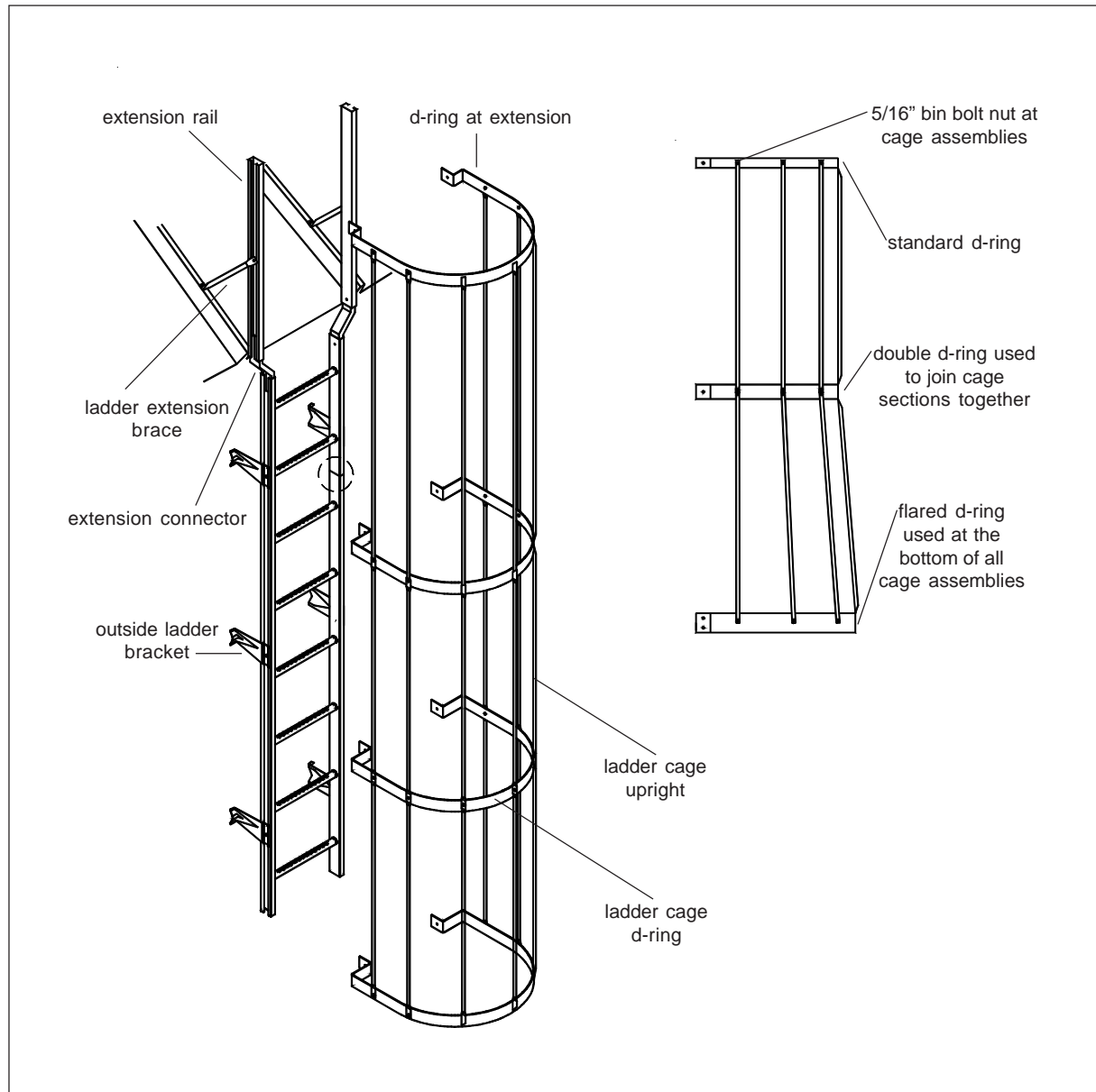
NOTE: The walk-thru ladder extension and safety cage shown here in the ladders section of the manual are available as options.



a LADDER RAIL EXTENSIONS



b LADDER RAIL EXTENSIONS



C LADDER RAIL EXTENSIONS



55

read the operations manual

READ AND UNDERSTAND YOUR OPERATIONS MANUAL PRIOR TO ATTEMPTING TO USE THE EZEE DRY BIN. FOLLOW ALL OF THE SAFETY ADVISORY INFORMATION FOUND IN THE CONSTRUCTION AND OPERATOR'S MANUALS.

Contact the Engineering Department of MFS/YORK/STORMOR with ANY questions at **(308) 384 - 9320**.

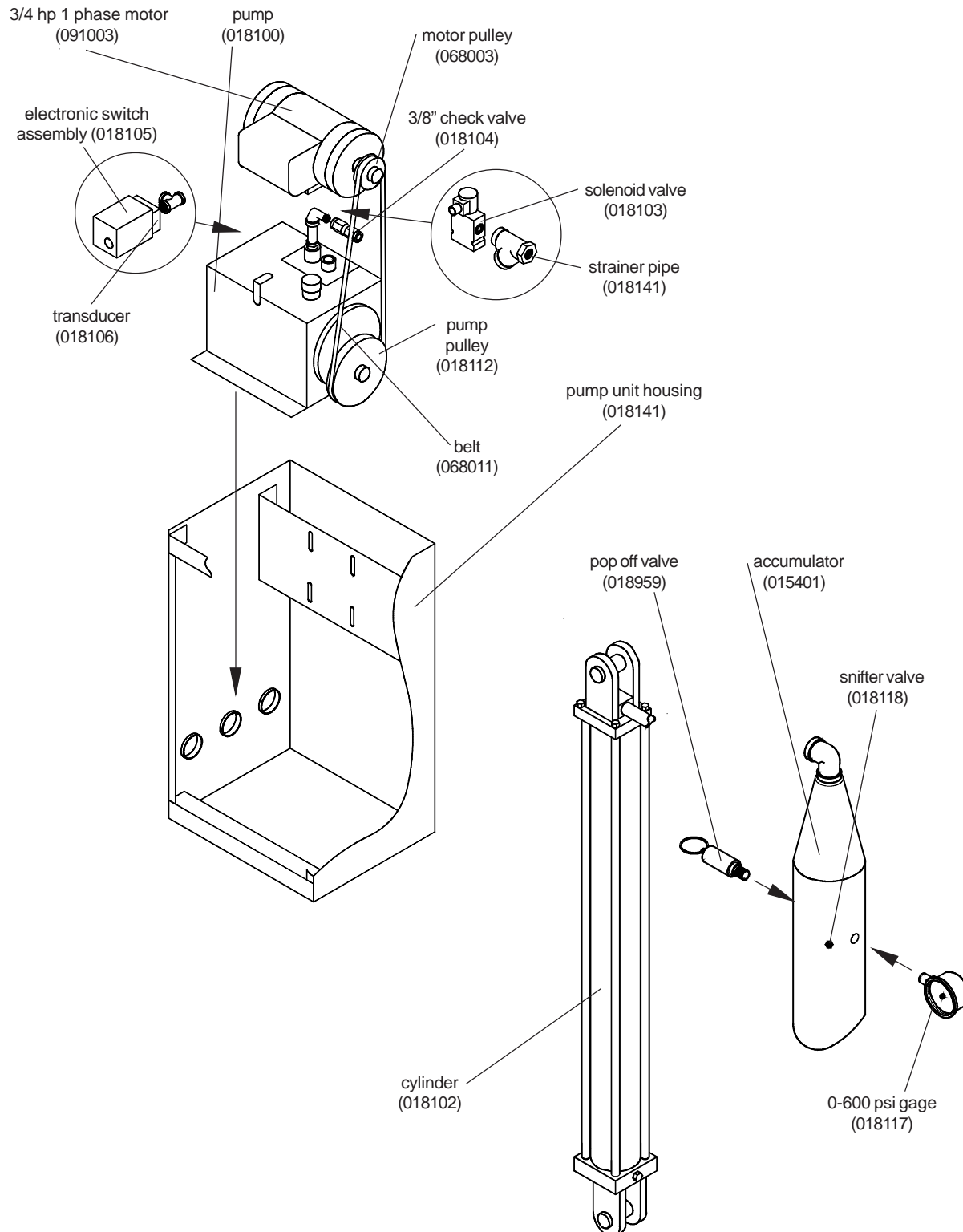
Operation

Prior to filing your new bin for the first time, you should check the following:

1. All bolts are in place and properly tightened.
2. All ladders, handrails, stairways are securely in place.
3. The bin has been properly anchored to the foundation.
4. Unloading equipment operates freely and all control gates are operable.
5. The inner door panels of the sidewall door should be tightly closed.
6. The sweep arm of built-in sweep systems is positioned over the intermediate sumps.
7. The working areas around the bin are clean and free of clutter.
8. All guards and shields are in place.

NOTE: Refer to the installation and operations manual of the control panel for information pertaining to the actual drying operation of the Ezee Dry.

Pump Unit Assembly (selected parts)





Part Numbers

Sidewall / Door Sheet Part Numbers

Gage	Length	Color Code	Sidewall / Door Sheet Description	36'
17	114 1/8"	Red	Top Sheet	011534
10	115 5/8"	Brown	Double Punched, Dryer Sheet	015770
15	114 1/8"	Blue / Yellow	Stiffener Punched Sheet	015775
14	114 1/8"	Yellow	Stiffener Punched Sheet	015776
12	114 1/8"	Black	Stiffener Punched Sheet	015772
17	114 1/8"	Red	Standard Sidewall Sheet	010712
15	114 1/8"	Blue / Yellow	Standard Sidewall Sheet	011328
14	114 1/8"	Yellow	Standard Sidewall Sheet	010710
12	114 1/8"	Black	Standard Sidewall Sheet	010708
12	115 5/8"	Black	Flashing Punched, Bottom Sheet	010725
11	115 5/8"	Orange	Flashing Punched, Bottom Sheet	010743
12	115 5/8"	Black	Stiffener and Flashing Punched, Bottom Sheet	015779
11	115 5/8"	Orange	Stiffener and Flashing Punched, Bottom Sheet	015780
11	67 1/4"	Orange	Manway Door Sheet with Hardware	015761
17	57 7/8"	Red	Fan Entrance / Door Sheet	015158
15	67 1/2"	Blue / Yellow	Short Door Sheet	011329
14	67 1/2"	Yellow	Short Door Sheet	010715
12	67 1/2"	Black	Short Door Sheet	010714
14	123 1/2"	yellow	Long Door Sheet	015494
12	123 1/2"	Black	Long Door Sheet	015492
14	57 7/8"	Yellow	Short Door Sheet	015237
12	57 7/8"	Black	Short Door Sheet	015496

Stiffeners

Part No.	Description
015736	Top stiffener
015520	Long intermediate stiffener
015521	Short intermediate stiffener
015503	Short base stiffener

Roof Parts

Part No.	Description
011400	40" steel roof cap
011401	Roof cap flashing
011402	36" peak ring
011410	36' roof sheet
011420	36' manhole roof sheet
011423	Super manhole cover
011439	Roof safety ring pipe
011433	36' roof ladder set
011437	36' roof reinforcing ring
011466	36" roof cap slide rod
011464	Eave clip
011465	36" roof cap hardware
011467	Manhole hardware package
011468	Roof safety ring connector
011470	1" roof pipe clamp
013100	21'-36' standard roof hardware box #1
013137	36' standard roof hardware box #2

Door Parts

Part No.	Description
011649	1 Ring door frame
011651	1 Ring door outer cover
011653	2 Ring door frame
011655	2 Ring door outer cover
011691	Door hardware package
010087	Outer door clip
011679	Striker plate
018161	T-handle
018165	T-handle cam
018937	#8 x 3/8" Screw
018947	#8 Lockwasher
018974	#8 Hex nut
90000013	1/4" x 1/2" Hex head cap screw
90005000	1/4" Flanged nut

Door / Step Across Platform Parts

Part No.	Description
015256	Support angle LH 45 1/2"
015257	Support angle RH 45 1/2"
015258	Toeboard 37"
015259	Railing 37"
020037	Floor piece 37"
10033147	Corner post
015102	Main support brace
015103	Railing support brace
015098	Support angle LH 38 1/2"
015099	Support angle RH 38 1/2"
015100	Toeboard 26"
015101	Railing 26"
020026	Floor piece 26"

Fan Platform Parts

Part No.	Description
015254	Platform sidewall bracket
015077	Main support channel
015072	Support brace - left hand
015073	Support brace - right hand
015082	Cross strap
015078	Support channel
015080	End support channel
015757	Corner post
015085	80" Toeboard
015086	56" Toeboard
015756	84" Toeboard
015083	80" Railing
015084	56" Railing
015755	84" Railing
015249	Floor spacer channel
020079	Floor pieces



Hardware

Part No.	Description
018020	large hook
018905	5/16" x 1" bin bolt w/ seal washer
018912	1/2" hex nut
018913	5/16" hex nut
018918	3/4" self drilling screws
018927	5/16" x 2 3/4" bolt
028002	5/16" flanged hex nut
038240	3/4" x 1.5" bolt
068802	1/2" x 1 1/2" bolt
068803	1/2" x 2" bolt
068830	1/4" x 3/4" bolt
068900	3/4" hex nut
088003	2 1/2" OD x 17/32" ID pulley
90000031	3/8" x 1" bolt
90000128	5/16" x 3 1/2" eye bolt
90005000	1/4" flanged hex nut
90005005	1/4" hex nut
90005021	3/8" hex nut
90010000	1/4" flat washer
90010020	3/8" flat washer
90031012	3/8" x 1 1/4" eye bolt
90031014	1/4" cable clamp

Dryer Parts

Part No.	Description
015034	Dump hopper chute
015127	Upper dump neck chute
015280	Dump hopper assembly
015516	Pulley mounting angle
015518	Lift plate
015722	Dryer Floor Flashing
015522	Dryer Flr. Flashing Sealer Pieces
015589	Grain ring post
015728	1 1/2" x 5" purlin spacer
015730	Purlin mounting angle
015735	Perforated center cover
015764	156" 36' Ezee Dry chain
015765	228" (36') Ezee Dry chain
015766	36" (36') Ezee Dry chain
015767	48" (36') Ezee Dry chain
015768	68" (36') Ezee Dry cable
015138	Outer pulley main angle
015139	Outer pulley small angle
015509	Inlet funnel hanger bracket
015519	Perforated band bracket
015523	Pulley u - bracket

Cont. Flow Hydraulic Pump Parts

Part No.	Description
018100	Hydraulic pump
018102	2" x 30" Cylinder
018103	Solenoid valve
018104	3/8" Check valve
018105	Pressure switch
018106	Transducer
068003	3" O.D. Pulley x 5/8" bore
018112	6" O.D. Pulley x 1" bore
068011	Belt 5L-490
018117	Gauge
018118	1/4" Snifter valve
018959	Pop off valve

Base Parts

Part No.	Description
010704	Base Angle, Double Punched
018902	1/2" x 10" Anchor Bolt
015506	Base Plate Washer
015504	36' Ezee Dry Stiffener Base Clip
018912	1/2" Hex Nut
015505	Base Plate
018908	1/2" Flat Washer
010082	Base Angle Clip
018006	Base Angle Sealer, 5 Gallon
018007	Base Angle Sealer, 1 Gallon

36' Ezee Dry Plenum Structure Parts

Part No.	Description
015586	Center Ring Weldment
015591	Purlin Main Weldment
015597	Jack Beam Weldment
015691	Grain Ring, 7" x 68 1/2"
015692	Grain Ring, 10" x 68 1/2"
015693	Grain Ring, 15" x 68 1/2"
015694	Grain Ring, 15" x 68 1/2"
015714	Plenum Sheet, 1 Hole
015715	Plenum Sheet, 2 Hole *
015729	Purlin Cross Brace
015731	Purlin, Lower Skirt
015732	Purlin, Intermediate Long
015733	Purlin, Intermediate Short
015734	Purlin, Perforated Skirt
015515	Stiffener Tie Rod
015507	Inlet Funnel, 32 1/2° Roof

* - For Ezee Dry Batch Dryer Bins; Not for Ezee Dry Continuous Flow Bins.

Ezee Dry Winch Parts

Part No.	Description
015141	Ezee Dry Winch Bracket
015142	Winch DL1400



Significant changes from the last printing are:

1. Page 3, The Table of Contents Changed.
2. Page 27, The “Top Stiffener Attachment” illustration was changed to show that 5/16” flange nuts are used at stiffener locations on the side of the stiffeners.
3. Page 49, The “Add the Intermediate Stiffeners” illustration was changed to show that 5/16” flange nuts are used at stiffener locations on the side of the stiffeners.
4. Page 55, The “Even Ring Bin Base Stiffeners” and “Odd Ring Bin Base Stiffeners” illustrations were changed to show that 5/16” flange nuts are used at stiffener locations on the side of the stiffeners.
5. Page 60, The “Ladders” section of the manual was updated.
6. Page 66 to the end of the manual, the “Part Numbers” section of the manual was updated.
7. Minor changes were made throughout the entire manual.

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MFS / YORK / STORMOR

P. O. Box 2105 • 2928 East Highway 30
Grand Island, Nebraska 68801, U.S.A.

(308) 384-9320 • FAX (308) 382-6954